## RESEARCH ARTICLE

# DIGITALIZATION OF THE WORLD ECONOMY 

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#### Abstract

Relevance: The modern development of the world economy is characterized by the accelerated pace of scientific and technological progress and the increasing role of science when using the main factors of production, as well as the further intellectualization of living labor. Moreover, intellectual resources along with the latest technologies not only determine the prospects for economic growth, but also serve as an indicator of the level of independence and well-being of a country as well as its national status in the world. This is the case of countries that have already mastered innovation development to a greater extent that today occupy a dominant economic position. Innovative development is primarily the achievement of high economic results due to the introduction of innovations, and only to a lesser extent due to the extensive buildup of production factors. In recent decades, there has been an explosive growth in computer and Internet technologies. New innovative forms of IT technology have appeared, for example, cloud computing. Information and communication technologies are integrated in all areas of the economy, which contributed to the formation of such concept as the digital economy. Results: Stages of development and implementation of digital technologies in the global economy are identified. The main directions of the digital transformation of the economy are given and scientifically substantiated. Internet technologies in the modern economy are investigated and the leading countries by the number of Internet users are presented. The use of digital technologies in the financial, industrial and social sectors, in the field of retail is justified. The classification of countries is given according to the rate of growth and the state of the digital economy: leading countries; countries with slower growth; promising countries; countries with problems. The advantages of the digital economy over the traditional one are identified, as well as new economic risks are identified that the state should be able to predict and minimize.


Key Words: world economy, digital economy, Internet commerce, digital product, use of digital technology, economic risks.

## رقمنة الاقتصاد العالمي

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يتميز التطور الحديث للاقتصاد العالمي بالوتيرة المتسارعة للتقدم العلمي والتكنولوجي والدور المتزايد للعلم عند استخدام العوامل الرئيسية للإنتاج ، فضلا عن مزيد من التغكير في العمل الحي. علاوة على ذلك ، فإن الموارد الفكرية إلى جانب أحدث التقتيات لا تحدد آفاق اللنمو الاقتصادي فحسب ، بل تعمل أيضا كمؤشر لمستوى استقلال ورفاه بلد ما وكذلك مركزه الوطني في العالم. هذه هي حالة البلدان التي أتقنت بالفعل تطوير الابتكار إلى حد كبير والتي تحتل اليوم مركزا اقتصاديا مهيمنا. التتمية المبتكرة هي في المقام الأول تحقيق نتائج اقتصادية عالية بسبب إدخال الابتكارات ، وبدرجة أقل فقط بسبب التراكم الواسع لعوامل الإنتاج. في العقود الأخيرة, كان هناك نـي هائل في الحاسوب وتتنيات الإنترنت. ظهرت أشكال مبتكرة جديدة لتكنولوجيا المعلومات ، على سبيل المثال ، الحوسبة السحابية. يتم

دمج تتنيات المعومات والاتصالات في جميع مجالات الاقتصاد ، مما ساهم في تثكيل مفهوم مثل الاقتصاد الرقمي. النتائج: مراحل تطوير وتتفيذ التقتيات الرقمية في الاقتصاد العالمي تم تحديدها. يتم إعطاء الاتجاهات الرئيسية للتحول الرقمي للاقتصاد وإثباتها علميا. يتم التحيق في تتنيات الإنترنت في الاقتصاد الحديث ويتم تقديم الدول الرائدة من خلال عدد مستخدمي الإنترنت. إن استخدام التتنيات الرقمية في القطاعات المالية والصناعية والاجتماعية ، في مجال البيع بالتجزئة له ما ييرره. يتم تصنيف البلدان وفقا لمعدل النمو وحالة الاقتصاد الرقمي: البلدان الرائدة ؛ البلدان ذات النمو البطيء ؛ البلدان الواعدة ؛ البلدان التي تعاني من مشاكلـ الياد يتم تحديد مزايا الاقتصاد الرقمي على الاقتصاد التقليدي ، وكذلك يتم تحديد المخاطر الاقتصادية الجديدة التي يجب أن تكون الدولة قادرة على التتبؤ والتقليل منها.

الكلمات المفتاحية: الاقتصاد العالمي، والاقتصاد الرقمي، والتجارة عبر الإنترنت، والمنتجات الرقمية، واستخدام التكنولوجيا الرقمية، والمخاطر الاقتصـادية.

## Introduction

The most important direction for the development of economies of various countries in modern conditions is the transition to a digital economy, due to changes in the forms and methods of providing consumers with various kinds of high-tech services. In recent decades, there has been an explosive growth in computer and Internet technologies. New innovative forms of IT technologies have appeared, for example, cloud computing. Information and communication technologies are integrated in all areas of the economy, which contributed to the formation of such a concept as the digital economy. The digital economy is an economy based on the use of the most modern information technologies. The development of the digital economy is one of the drivers of economic development in the world. Throughout history, economic development has been based on inventions and innovative technological breakthroughs[3]. It is enough to pay attention to the telegraph, railways or cars. Each one of these breakthroughs contributed to the acceleration of global economic growth. Currently, the global Internet is rightfully considered such a breakthrough, using it, together with a large number of diverse applications, stimulates the development of the economy of both developed and developing countries.

Thus, the development of the Internet, in fact, launched a mechanism for the formation of a digital economy, which will rapidly transform the business and all areas of production, which will lead to the formation of a new technological structure in the global economy. According to the International Monetary Fund, the growth in the proportion of digitalization in the economies of the world over the past three years has averaged $15 \%$. Digitalization of economic activity can be broadly defined as the inclusion of data and the Internet in production processes and products, new forms of consumption of households and states, the formation of fixed capital, cross-border financial flows. At the same time, a certain problem arises with assessing the growth of the digital economy. For example, the rapid pace of change has led IMF experts to worry about the underestimation of the economic activity and economic well-being associated with digital products. This problem was identified by IMF experts on the basis of a disproportion in indicators: countries with fast technological changes in the manufacturing sector demonstrated low productivity growth rates[6]. Internet platforms and smart phones have provided consumers with access to many new services since their significant growth in the mid-2000s, while GDP and productivity have shown slow growth in advanced economies. Digitalization is becoming a fundamental trend in the development of the world economy, changing its structure and translating it into a new qualitative state, when digital technologies dominate in all areas of the economy and public life. Economic growth is increasingly based on technology and knowledge, making them the main productive force. Thus, the digital economy and its achievements in the future will become a key source of ensuring the welfare of the subjects of the world economy. For example, in biotechnology and medicine, digital technologies contribute to a qualitative improvement in health, and in the telecommunications sector they lead to the development of the
social sphere and education, and in the economy they provide more efficient energy consumption[9]. It is also important that digital technologies can be used including by the least socially protected groups.

## Related work

The problem of the development and functioning of new economies, among which the digital economy, is actively investigated in the works of world scientists, among which it is worth highlighting: TomislavJ. Sudarevic. Sharing Economy and "Industry 4.0" as the Business Environment of Millennial Generation - MarketingPerspective [2]; Hwang J., Griffiths M. (2017). Millennials value perception and behavioral intent in using collaborative consumption services // Journal of Consumer Marketing. Vol. 34. N2. 132-146. [1]; Hamari J. Sjöklint M., Ukkonen A. (2015).

## Proposed work

The main research methods can be called systemic-structural, structural-functional and comparative methods. The analysis of the principles and methods of construction, as well as trends in the development of the world economy, is based on the modeling method. The evaluation of the digitalization of the world economy was assessed using the coefficient method and the comparison method. The main methods for the development of the main directions of digitalization of the economy are the analysis of materials accumulated in the framework of statistical collections; the results of theoretical studies of leading world authors dedicated to the studied issues; open sources of information posted on the Internet: official websites of financial departments of the countries of the world.

## Results and Discussion

The digitalization of the global economy is striking in its scale, growth rate and geographical distribution. Since the end of the 50s of the last century, digital innovations have spread in waves around the world; the main suppliers of these processes were research centers in the USA and Europe (table 1).

Table 1. Stages of digital technology implementation [8]

| Year | Principal Information Technology | Specific application |
| :---: | :---: | :---: |
| From the beginning of 1950s to the mid 1960s | Mainframes and Databases | Modern programming languages, database management systems |
| From the end of 1970s to the beginning of 1980s | Desktop systems and personal computers | Basic office software, personal computers, document processing, file storage |
| From the beginning of the 1nO日amentil thanid 1nO日a | Software for companies | Enterprise software, business process |
| From the mid-1980s until the mid-1990s | Internet and e-commerce | Internet technology, e-commerce, email and chat |
| From the mid-1990s to the beginning of the 2000s | Mobile Broadband | GPS Wi-Fi, 2G / 3G, laptops, mobile phones |
| From the beginning of <br> 2000s to the beginning of | Social networks | Smartphones and applications, digital advertising and marketing |
| From the beginning of the 2010s until the mid 2010s | Big data and the Internet of things | Big data sets, predictive analytics, Internet of things, industry 4.0 |
| From the mid-2010s | Virtual reality, artificial intelligence | Predictive algorithms, machine learning, virtual reality, language recognition, robatice |

Each wave of innovation processes was much more effective than the previous one, covering new countries and giving an increasingly intensive economic effect. At the same time, the transition from one stage to another was significantly reduced, for example, the transition from collective computers to personal computers lasted more than a dozen years, now such a transition can take place over years or even in a matter of months. The first implementation of informational innovations was in the automation of existing technological processes. The second advent of innovative technologies was associated with the development of computer networks, in particular the Internet, mobile communications, the formation of social networks. Nowadays, digital innovations are changing the very model of companies; there are completely different forms of doing business, increasing their efficiency and reducing costs in doing business. The main directions of digital transformation of the economy are presented in Fig. 1


Fig. 1. Basic digital technologies for transforming the economy [Compiled by the author]

In table 2, we analyze the authors' work on the digital economy.
Table 2 - analysis of the authors' work on the digital economy [compiled by the second].
\(\left.$$
\begin{array}{|l|l|l|}\hline \text { Author } & \text { Research methods } & \text { The main result of the work } \\
\hline \text { Tomislav J. Sudarevic } & \begin{array}{l}\text { "Digital Sector" refers to a } \\
\text { specific perimeter of economic } \\
\text { activity }\end{array} & \begin{array}{l}\text { Analysis of digital sectors as } \\
\text { components of the digital } \\
\text { economy in general. }\end{array} \\
\hline \text { Hwang J., Griffiths M. } & \begin{array}{l}\text { The digital economy is often } \\
\text { used to indicate that } \\
\text { digitalization (such as the use of } \\
\text { the Internet) has spread across } \\
\text { all sectors of the economy, from } \\
\text { agriculture to logistics. }\end{array} & \begin{array}{l}\text { Communication infrastructure } \\
\text { that supports digital tools and } \\
\text { that is safe enough for use even } \\
\text { in heavy industry. }\end{array} \\
\hline \text { Hamari J. Sjöklint M., Ukkonen } & \begin{array}{l}\text { They advanced the theory that } \\
\text { the use of data at real-time } \\
\text { causes a greater increase in } \\
\text { labor productivity and reduced }\end{array} & \begin{array}{l}\text { Industry 4.0 can also be another } \\
\text { area where future technologies } \\
\text { such as 5G will have a } \\
\text { cumulative development effect } \\
\text { for the digital economy as a }\end{array} \\
\hline \text { Van Ark } & & \begin{array}{l}\text { Support services are necessary } \\
\text { for the functioning of the } \\
\text { infrastructure of the digital } \\
\text { economy }\end{array}\end{array}
$$ \begin{array}{l}These services include: digital <br>
consulting services, computer <br>
repair services, software support <br>

and maintenance services and\end{array}\right\}\)| other types of services. |
| :--- |

According to various estimations, the volume of the world market of the digital economy in the traditional sense reached $7.5 \%$ of the world gross domestic product (GDP) in 2018, and in absolute terms, $\$ 6.15$ trillion. If we consider the digital economy in an expanded sense, including all key technologies, then its volume amounted to about $9.1 \%$ of world GDP, which in absolute terms is $\$$ 7.14 trillion. According to forecasts, the digital economy of the traditional approach should grow 1.7 times by 2025 and reach almost $\$ 7$ trillion, and the digital economy, in terms of the expanded approach, should increase over $\$ 12.6$ trillion. The average growth rate of the digital economy in the first version should be about $6 \%$ per year, and in the second, about $8.8 \%$, which is several times higher than the global economic development indicator, which amounted to $3.4 \%$ in 2018. The most important proportion of Internet users is in Asia, however, the proportion of Internet users in the population of Asia is characterized with a penultimate place - only half of the population uses the Internet (49.7\%). According to this indicator, North America is the leader, where Internet users make
up $88 \%$ of the region's population. The largest growth in Internet users is observed in Northern Europe (94\%), Western Europe (90\%) and North America (88\%).Africa has the fastest growth rate over $20 \%$ per year. The most important percent of Internet users falls on developed countries, in particular, the USA, EU countries, Japan - an average of $81 \%$ of the population in the Internet use.

Table 3 Countries Leaders by the number of Internet users [6]

| Country | The number of Internet users, million people |
| :--- | :--- |
| China | 772 |
| India | 350 |
| USA | 277 |
| Japan | 110 |
| Brazil | 110 |
| Russia | 87 |
| Germany | 72 |
| Indonesia | 71 |
| Nigeria | 70 |
| Mexico | 59 |

The development of the digital economy in the broad sense of the word can be observed in the following main areas:
$\checkmark$ financial, in which digital technologies cover a fairly high proportion of all financial services;
$\checkmark$ production, in which this sphere is not so developed, since its main share falls on the high-tech sector;
$\checkmark$ trading, in which online trading is currently not so common;
$\checkmark$ Social, for example, healthcare, education, the provision of other social services.
Examples of the development of digital technologies in the financial sector can be considered like the use of electronic calculations and payments between banks. In particular, in the SWIFT system, which includes more than 9,000 credit organizations from 200 countries, more than 2.5 billion payments are made annually. The TARGET2 payment system, which replaced the TARGET1 system in 2007, connects the information flows of 28 central banks of the EU member states, which allows quick online payments. Fed wire, a federal automated money transfer system for real-time gross settlements, is used to transfer funds between 6 thousand banks, through it $99 \%$ of all payments by credit institutions in the USA are made. [10]
Bank card transactions are increasing significantly crypto currencies are becoming new instruments of payment; digital banking, or electronic banking (e-banking) services are being developed.
So, using electronic banking, commercial banks:

1) provides customers with statements of operations performed by open accounts;
2) informs customers about the types of banking products (deposits, loans, mutual funds);
3) makes out applications for opening deposits, loans, bank cards;
4) makes settlements as part of internal transfers to bank accounts;
5) transfers funds to accounts opened with other banks;
6) converts currencies, etc.

If the first two types of services are based on mobile communications, the other services require mobile Internet services, including for providing individuals with access to international currency and stock markets based on online trading.

Indicators of countries' involvement in electronic banking indicate that this type of activity of banks is gaining increasing momentum. In particular, in the USA, 86 of the 100 largest banks provide Internet services. In 2010, in the USA, $46 \%$ of the adult population uses Internet banking, $58 \%$ of the population is users of distant banking services, in 2013, these percents increased respectively, $51 \%$ and $61 \%$ (about 70 million people). In EU countries, these indicators were more heterogeneous within different countries. If in the EU as a whole ( 28 states) the percent of the population that used electronic banking services averaged $40 \%$ in 2011 and increased to $46 \%$ by 2015, then in many countries it was significantly higher: in Norway - $90 \%$; Finland - 86\%; The Netherlands - 85\%; Denmark - 85\%; Estonia - 81\%; Sweden-80\%; Luxembourg - 65\%; Latvia - $64 \%$; Belgium $-62 \%$; France-58\%; Austria-51\%; Lithuania - 50\%; Czech Republic - $48 \%$; Malta - $47 \%$.

Indicators of population involvement in the use of electronic banking services that are below the average for EU countries were obtained at: Spain - 39\%; Hungary - 34\%; Slovenia - 34\%; Croatia $33 \%$; Poland - 31\%; Portugal-28\%; Italy-28\%; Cyprus - 20\%; Greece - $14 \%$.The lowest percents were in Bulgaria, Macedonia, Romania (all 5\% each). [11]

In the financial sector, not only banking services are carried out via the Internet. There are online services in the insurance sector. On the website of insurance companies you can familiarize yourself with the services provided, fill out a questionnaire, choose the best insurance conditions and purchase a policy. A common portal appears in a number of countries where you can find information on all insurance companies, which allows the client to compare products of existing companies. Currently, online services in the insurance sector are not carried out everywhere, but in the future, further expansion of Internet insurance is expected due to the development of ways to protect against fraud. The percent of sales of insurance policies over the Internet continues to grow in almost all countries. Special development, as well as Internet banking, Internet insurance received in the United States $20 \%$ of all sales are on the Internet. This happened with the advent of online exchanges for the sale of health insurance policies as part of the ongoing health care reform. Digitalization is also used in the stock market. Online trading is expanding, electronic platforms on stock exchanges and electronic exchanges themselves are appearing. The largest electronic exchanges are the American BATS
(Better Alternative Trading System) and the London Chi-X Europe. [7]
The second direction in the development of the digital economy is the production sector, in which there are not only "clean" IT companies, but also companies focused on broad interaction with financial technology companies that make significant investments in the digital world.

In particular, in modern conditions, when Tesla from Silicon Valley spent billions of dollars on revolutionary solutions in the automotive industry, developing electric cars, the world's largest automotive giants such as Ford and BMW, radically revised their policies and also focused on intensive development digital platforms for the production of electric vehicles. According to our estimates, the companies that use the best digital platforms are the most successful. These sectors include automobile, telecommunications, and energy (in particular, they together account for $30 \%$ of China's GDP).

In recent years, the Nasdaq 100 - the stock index with the largest number of IT / digital companies has surpassed the S\&P 500 index. The profit of the Nasdaq 100 has increased by almost $300 \%$ since 2007, while the profit of the S\&P 500 has increased by $40 \%$. In our opinion, the growth in profits of companies in the IT sector has a very high potential as long as there is a stable demand for new digital platforms and applications.

The third direction of digital technology development is the development of e-commerce in the retail sector. The leader in the e-commerce market is the Asia-Pacific region. The European Region ranks second in e-commerce, with North America in third place. If we look directly at the countries, the leader is China with a market volume of more than $\$ 650$ billion, followed by the United States (\$ 340 billion) and Japan ( $\$ 79$ billion) with a fairly serious lag.

Among the largest online stores in the world is the American company Amazon, which since 1998 has been constantly expanding its business. The capitalization of this company in the first three years of its foundation exceeded the market value of the investment bank J. P. Morgan. Amazon currently has a market value of $\$ 35$ billion.According to experts, in the US in the near future, e-business companies will become unattainable for companies in the real sector.The second most important American online store is eBay, with a cost of $\$ 10$ billion.The cost of the world's largest electronics store BestBuy is about \$ 50 billion.The largest global retail chain Alibaba does not have its own inventories - all trade is carried out directly via the Internet.Thus, consumers of social services increasingly use the Internet to order clothes, electrical goods and food, which is actually provided by distributors whose digital ordering platforms have replaced physical traditional stores. The economy of participation is also developing, which will gradually become an increasingly important component of the global digital economy.

The fourth direction of the development of the digital economy is its wide distribution in the social sphere, including in healthcare and education. It should be borne in mind that while in the field of healthcare a digital platform is still in its infancy; distance education is actively used in education,
the volume of the annual global market turnover of which increased from 52.6 billion dollars in 2010 to 107 billion dollars in 2015, and is projected to reach 215 billion dollars by 2025 . The leader in distance education is currently the United States, which together with Canada occupies more than $50 \%$ of the entire e-education market. The greatest growth is observed in Asian countries: in India $55 \%$ of the PRC - more than $50 \%$, Malaysia - more than $40 \%$.

In recent years, a large number of studies have been conducted on the development of the digital economy. Thus, the Fletcher School at Tufts University, in partnership with MasterCard, presented the study "Digital Evolution Index in 2017". The companies analyzed the progress that countries have made in the development of their digital economies, as well as the degree to which new opportunities are integrated into people's daily lives. The leaders in the development of the digital economy, according to the study, are Singapore, the United Kingdom, New Zealand, the United Arab Emirates, Estonia, Hong Kong, Japan and Israel. The pace of the digital development in these countries serves as an example for other countries to choose such development vector.
According to the results of the MasterCard study, which was conducted among online users living in 60 countries, the Internet technology user index was calculated, which was determined on the basis of four key indicators and 170 unique indicators: Internet access and infrastructure development; consumer demand for digital technology; government policies, laws and resources in this area; innovations in the country (including investment in technology and digital startups). These studies were conducted in Norway, Sweden, Switzerland, Denmark, Finland, Singapore, South Korea, the UK, Hong Kong and the United States, which are in the TOP 10 countries with the most developed digital economies.
After analyzing the growth rate and the state of the digital economy, all countries are divided into four categories:

Category I - leading countries: Singapore, Great Britain, New Zealand, UAE, Estonia, Hong Kong, Japan and Israel demonstrate high rates of digital development and continue to lead in the spread of innovation;
Category II - countries with slowing growth rates: this includes many developed countries in Western Europe, the countries of Scandinavia, as well as Australia and South Korea. For a long time, these countries have shown steady growth, but have now significantly slowed down the pace of development. Without innovation, they risk falling behind digitalization leaders. As you can see, the two largest world economies (USA and Germany) are located on the border between the leading countries and slowing countries. Next to them is the third largest economy in the world, Japan. At the same time, the dynamics of digital development in the UK is greater than that of the countries of the European Union;
Category III - promising countries: despite the fact that these countries show a relatively low overall level of digitalization, they show steady growth rates, which attract investors. These countries
include: China, Kenya, Russia, India, Malaysia, the Philippines, Indonesia, Brazil, Colombia, Chile, and Mexico;

Category IV - countries with problems: these include South Africa, Peru, Egypt, Greece, and Pakistan.These countries face serious challenges associated with low digital development and slow growth.

For the leadership of these countries, it is necessary to recognize the risk of finding themselves in a "digital impasse" and, using the countries with more dynamic development, to study what political measures can increase the country's competitiveness.

This division of countries indicates the cyclical implementation of digital technology in the global economy.

At the first stages, digitalization embraced the most developed countries - the USA, Japan, Germany, which at present have more lost their leadership positions and have become one of the countries with a slowing digitalization growth rate.

Less developed countries -in other words the new industrial countries - Singapore, Hong Kong, etc., are currently becoming leaders. The United States and Hong Kong have an average penetration of financial technology services ( 33 and $32 \%$, respectively), below the average - Singapore ( $23 \%$ ), Canada (18\%) and Japan (14\%).

Leading experts in the field of digitalization believe that the state should be both the initiator of the development and implementation, and an active user of digital technologies.

The leading role of the state in the development of the digital economy is emphasized by World Bank consultant E. Stott, who believes that the digital economy needs to develop in the framework of national policy. So, in the United States, government plays a significant role in the development of the digital economy, especially in the initial stages. R. Atkinson, president of the US Information Technology and Innovation Fund, cites Google as an example, which was created with money received from government grants. The government is helping to build a digital economy by financing R\&D and providing tax incentives along with private venture funds. [12] At the same time, the experience of Australia shows that the digitalization of the economy can develop under the pressure of the market. D.Tredwell, Australia's World Bank Representative, Director of Global Practices for Digital Platforms and Services, believes the government should have certain tasks, including investing in public broadband Internet access, science and research, and providing regulatory base.

In the UK, in 2010, the Law on the Digital Economy was adopted, and then a digital economy strategy was developed with the goal of solving the problem of successful digital transformation of the national economy. For this, the government plans to create a world-class digital infrastructure and create conditions for the development of digital business, which includes financial support, as well as the provision of consulting services. The above measures should motivate companies to use digital innovation. In addition, this strategy calls for the opening of five international digital centers in
emerging markets to support British business in other countries. According to Accenture consulting company, the development of the digital economy will bring the British economy an additional $£ 654$ billion by 2035, which will be a tangible support for business and government in the face of growing unemployment (from 4.5 in 2017 to $4.8 \%$ in 2018), declining labor productivity, which has not been growing since 2010, an increase in capital outflows from the country.The digital economy has not only tangible advantages over the traditional one, but also carries new risks that the state should be able to predict and minimize.

Among the most pressing problems should be highlighted the transformation of the labor market. Experts disagree on this issue. As noted in a World Bank study, the so-called digital dividends include an increase in jobs. This view contradicts the widespread assertion that the digital economy will cause a sharp increase in unemployment in the world. Experience shows that widespread automation leads to the abandonment of the use of living labor, which entails mass layoffs of workers. With increasing unemployment, the company's total income decreases, wage growth stops, resulting in a reduction in aggregate demand, and depressive demand undermines incentives for investment and employment, which will result in a slowdown in productivity growth and a decrease in the general welfare of society. Today, IT companies are ahead of commodity companies in terms of market capitalization. A study by the Global Center for Digital Business Transformation notes that in the next five years, the digital revolution will displace $40 \%$ of the companies that now occupy a leading position in the industry if they do not undergo digital transformation. [9] All these processes inevitably exacerbate the problems of socio-economic inequality.

According to D. Furlonger, vice president and board member of Gartner, every major technological breakthrough has had undesirable and even dangerous consequences, and a programmed economy will not be an exception. For example, the adverse effects of a programmable economy will result in ethical problems due to machines making independent decisions, as well as new opportunities for illegal financial activities.

In this case, we are talking about the spread of block chain technology, which may entail the loss by the state of a monopoly on the issue of national currency [5]. In addition, the digital security issue is becoming relevant. Losses from cyber attacks implemented through computer viruses are estimated at tens of billions of dollars. In 2016, around 600 million digital crimes were committed in the world, with business losses amounting to about $\$ 400$ billion. According to Microsoft, the number of cybercrimes in the world did quadruple only in 2017.

## Conclusions

Digitalization of the economy is an important component of the economic development of most countries and can become the institutional basis for sustainable growth in production and people's living standards in the future.The development of almost all sectors of the economy is subject to
digitalization to one degree or another.This is manifested to a greater extent in the field of financial services and trade, but also in the production sphere, Internetization can reduce costs and increase productivity.Moreover, the spread of this process is characteristic of all regions of the world.For each country, the development of the digital economy depends on the maturity of markets, the level of development of science, education and the state of the national economy.
There is a point of view according to which the digital economy will reach a sufficient degree of development only if the value of transactions for the sale of goods and services in the virtual space exceeds the cost of similar transactions in the real economy.But this is only possible if in the real economy a sufficient number of various goods that can be bought and sold over the Internet will be produced. The widespread digitalization of the economy cannot be achieved and become effective without increasing the competitiveness of real production, updating and expanding its potential.

The digital economy has not only tangible advantages over the traditional one, but also carries new risks that the state should be able to predict and minimize.Among the most pressing problems should be highlighted the transformation of the labor market, the problems of socio-economic inequality and losses from cyber attacks. The transition to a model of the digital economy in the world economy is accompanied by fundamentally new, qualitative changes in socio-economic relations both at the state level and at the level of business structures.This process brings new opportunities and threats.The share of the Internet economy is growing in the GDP of all developed countries, but according to estimates by Gartner analysts, by 2025 the digital transformation will affect all areas of most countries of the world.
In order to measure the effectiveness of the digital economy, it is necessary to have generally accepted and unambiguous methods that are not yet available.
Obviously, the results should be evaluated based on the goals and objectives set, should be calculated and realized taking into account the criterion of socio-economic feasibility.

A digital economy development strategy cannot be developed solely for the sake of testing a new idea.

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