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# The digitalization process: what has it led to, and what can we expect in the future?

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**Abstract.** To date, technology has become so integral to our lives that it is almost impossible to imagine a day without using it. The digitization of society is gaining speed every day, affecting all areas of life: communication with people and the management of entire governments. To one degree or another, the use of digital technologies can be observed in every social institution on which society is built. The process includes social changes associated with introducing modern technologies into society and social control. Since the second half of the XX century, the introduction of digital technologies has been seen as a means of overcoming temporal and spatial restrictions, the negatives of subjectivity that hinder the development of modern society. In the XXI century, the influence of digital technologies has grown significantly, which calls into question the sovereignty of the person himself as a social object. Undoubtedly, technology makes our lives much more accessible, with benefits such as saving time, accessing new information, and simplifying everyday life. However, the more social space is captured by objective digitalization, the more this space undergoes subjective influence. Digital technologies do not liberate the person from subjective control but, on the contrary, contribute to it. In the article, we consider how this happens in the field of the major social institutions of society, and possible vital consequences of this impact.

**Keywords:** digitalization, digital transformation, social institutions, digital technologies, social control.

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## 1.Introduction

Living in the 21st century, we have witnessed the fantastic rapid development of new technologies that could only be science fiction. Digitalization, or digital transformation, is turning into a global process, which means the widespread introduction of digital technologies in various areas of life: economy, management, education, culture, religion, family, etc. Society is moving towards a digital future, which is not surprising, as it provides several advantages. It involves the transition of the financial industry to new models of business processes and production tools based on information technology and a gradual change in people's lifestyles, worldviews, and values. Other vital institutions are also targeted. We're witnessing unprecedented phenomenon of social representations, and comprehension of these representation is still not fully analyzed. Education, lifestyle, upbringing of children, religion - the increasing introduction of technology into human life creates conditions for leveling society. Digital technologies make life much easier, but they are an effective tool for managing society. The simplification of social life increasingly alienates people from each other, increasing alienation from the society in which a person lives. With the increase in the introduction of technology into everyday life, the frequent presence of a person in the virtual world moves him away from the real one. Although digital transformations simplify a person's life, people have a feeling of uselessness. A question arises about the meaning of existence in a world where a computer controls everything. However, computers that seem to control people are also managed by those who are interested in establishing control over society.

## 2.The spread of Digitalization

Digital technology has advanced faster than any innovation in our history. According to the UN, in just two decades, they have reached about 50 percent of the developing world's population and have changed society. Technology has empowered various industries in the service industry, the financial sector, public administration, etc. For example, advanced technologies help save lives, diagnose diseases and increase life expectancy in the healthcare sector. Virtual learning environments and distance learning have opened up programs for students otherwise excluded from education. [10]. The emergence and spread of the COVID-19 virus and the pandemic conditions have significantly accelerated the development of digitalization for a long time, showing the urgent need for digital technologies. What could take decades to develop and apply happened in months. While social and

economic life is returning to normal, there has been a high commitment to technological development.

According to forecasts by experts from the World Economic Forum (WEF) [8], digital platforms will be responsible for 60-70% of the life of society. Currently, almost half of humanity does not have access to the Internet. Nevertheless, in a few decades, the Internet will become an integral part of the life of not only developed and developing countries but of all humanity.

**3.Major Influences of Digitalization on Social Institutions**

**1.3.Economy**

Many countries are already on the path of digital transformation. In the USA, this is the "Industrial Internet Consortium"; in Russia, this direction of development can be called the "digital economy"; in Germany, it is Industry 4.0; in Russia, it is the "digital economy." These are different names for the same process- transforming all activities with the help of digital technologies (for example, big data), the Internet of things, or artificial intelligence. In 2016, Japan announced a comprehensive strategy called "Society 5.0", developed by the country's government with the active participation of the primary Japanese business association Keidanren. Under society 5.0. a new historical type of social organization is intended to replace the four classes mentioned above - the society of hunters and gatherers (1.0), agricultural (2.0), industrial (3.0), and information (4.0) societies. In another way, society 5.0 is called the "Superintelligent Society" [5]. The main goal is to create a society where everyone is comfortable, a community where any person can take an active part in the life of society.

Society 5.0 strategy aims to pool the resources, not of an individual but society. Unlike the concept of society 4.0 (discussed below), which sought to digitalize the unit, the project of society 5.0 involves the total digitalization of society to maximize the use of all its natural, technological, and human resources. In such a society, humans and robots (or artificial intelligence) coexist and work to improve the quality of life.

Another example of an approach to manufacturing based on the massive introduction of information technology into industry, business process automation, and the spread of artificial intelligence is the Industry 4.0 program (or the Fourth Industrial Revolution). Industry 4.0 is a uniquely comprehensive program covering the transformation of 18 functional areas at once - from production management to budget and management issues. The main goals of this strategy are to increase efficiency and manageability and unify business processes as much as possible.

The fourth industrial revolution (Industry 4.0) involves a new approach to production based on the introduction of information technology in the industry, the spread of artificial intelligence, and large-scale automation of business processes. Suppose the project of society 5.0 develops the complete digitalization of society and the maximum use of all its natural, technological, and human resources. In this case, the concept of society 4.0 aims to digitalize the unit- be it an individual, a single operation, or an individualized production procedure.

One of the clearest examples of the digitalization of the economy is the growing interest in digital currencies. Digital currency, or cryptocurrency, is money that exists only in electronic format. Digital cash does not have the properties of ordinary capital, but it is quite possible to buy material goods with it. The difference between digital currencies and cryptocurrencies is worth noting, as both are actively used in the economy and society. Digital currency exists in electronic form; by and large, it is a set of zeros and ones. It differs from banknotes and coins and is similar to non-cash funds, cryptocurrencies, and electronic money. Not soon, but within 10-15 years, the digital currency will replace fiat money, according to Liu Yihua, a researcher at the Taihe think tank [17]. According to him, during this period, the financial sector will undergo profound changes that will lead to the formation of a cashless society.

While there is no single and unified understanding of the digital economy in the world, it is widely used in practice. A new form of economic activity is being created that connects people, organizations, and machines in a virtual world of users, businesses, devices, data, and processes. As a result, we have changed business models by introducing new products and services, increasing value, and creating a new management culture. Digitalization, according to Brian Armstrong, increases business profitability.

The strategy of "sustainable development" currently plays a significant role in the development of the economy. The term "sustainable development" became widespread after publishing a report prepared for the UN in 1987, specially created in 1983 [11]. Sustainable development is a development that meets the needs of present generations without depriving future generations of the opportunity to meet their own needs. In other words, it is creating a balance between generations. Currently, the usage of digital tools in all areas, and most importantly, in the economy, is considered the best way to achieve this balance. Still, there is no clarity about what the term means and its meaning for society. This strategy has many benefits that improve society, but the downside is the achievement of stability and

permanence. The main goal of sustainable development is to create a smooth society in which abrupt changes are not welcome. Digital technologies can be an ideal vehicle for this stability. In the next decade, sustainability will become an essential element of industrial business models throughout the life cycle of assets. The future belongs to companies that make the most of intelligent data to empower employees and achieve mutually beneficial business and environmental outcomes.

**2.3.Authority**

E-government is fundamentally changing the process of relations between the government and the country's population. With the transition of the government system to digital format, there is a process of simplifying procedures, increasing the efficiency of public administration and transparency of general operations, ultimately increasing public control. However, this control is described as an increase in citizens' trust in the state. The creation of e-government involves constructing a nationwide distributed public administration system that implements the solution of a full range of tasks related to managing documents and their processing processes. Countries and IT corporations are investing tens of billions in developing artificial intelligence. At the same time, we still do not have a sufficient understanding of how to effectively integrate it into the solution of social issues and the practice of public administration. Although corporations and governments actively fight to develop artificial intelligence, society still perceives it very ambiguously, especially concerning the processes regulating socio-political relations.

A frequently discussed topic of governance digitization is China's social credit system. On January 1, 2021, the so-called social credit system was officially adopted and legislated in China, but work on this system began long before 2015. What is the essence of this system?

Now every Chinese citizen has a starting rating of 1000 points. Further, each act or action of a person in society is analyzed, and points are either added to it or removed. For "good behavior," you become an exemplary citizen and receive discounts, benefits, and low-interest rates on loans and other amenities from the state; you can also get extra hours of car or bicycle rental. And for the "bad": ban attendance at festive events and hotel reservations, they can confiscate the dog if you walk with it off a leash, they can show your face before a movie show if you are a stubborn non-payer, or delete your social networks. All this data is collected in a single database. This system brings society closer to George Orwell's (1984) dystopia. Big Brother doesn't seem like science fiction anymore. He monitors

the population of China because there are security cameras everywhere, and there are over 800 million of them in the country.

A low rating means that you have received a "black mark":

-They won't even take a taxi driver.

-They won't give you a loan.

-They won't sell tickets for public transport.

-They may even refuse to rent a bike.

-They will not even talk to people from the lowest category, the so-called "blocklist," because such communication will lower their status.

**3.3.Education**

Education is one of the social institutions that digitalization has affected the most. During the quarantine regime, educational institutions worldwide began looking for alternative learning methods - online learning platforms to continue students' learning process. This format of education was far from many schools and other educational institutions. However, there was a need to switch to an online form. However, there was a need to move to an online form, as in 186 countries, more than 1.2 billion children were affected by school closures due to the pandemic [12].

Even before the COVID-19 pandemic, education technology was already experiencing strong growth and adoption, with global investment in education technology reaching US$18.66 billion in 2019 and the total online education market projected to reach US$350 billion by 2025 [12]. Whether it's language apps, virtual learning, video conferencing tools, or online learning software, usage has skyrocketed since COVID-19. However, although the pandemic has receded and the transition to traditional learning conditions has returned, most educational institutions prefer the online format. It is noted that the demand for online learning has grown significantly in recent months and will continue to grow in the future. This interest in online education is due to several positive factors for education. One of the main advantages of an online school is the flexible learning schedule. Such a schedule is incredibly convenient for students who, besides general education, have other hobbies. More opportunities for gifted children. If in a "regular" school they are forced to study at a typical pace for everyone, then with online learning, they can work at an individual pace, ahead of their classmates. It is believed that distance learning increases and develops independence. Students devote more time to self-study using materials created by professional educators. It taught students to approach the matter consciously and responsibly, not "under pressure." These skills will be helpful to them in adult life. Another advantage of online education is the

lack of geographical boundaries. Now you can enter a foreign university and get a certificate without leaving the country.

However, online learning brings with it quite a few side effects. It's challenging to keep students' attention and engagement when learning happens online; the teachers do not have visual contact with them. They do not see their return and cannot assess the level of their attention and involvement in the process. It can make it challenging to ensure that students understand the material with no questions. Another huge disadvantage is the lack of personal contact with the teacher and other students. First of all, when the course consists of recorded lectures, the student cannot get an answer to the question of interest from the teacher while studying the material. Effective online learning is based on the student's discipline, responsibility, and motivation. Otherwise, there is a chance to spend all the time allotted for training on social networks.

> *"Access to the Internet is a great blessing. However, this information is fleeting and illusory. If you do not know exactly what you are looking for, if you do not save what you find, consider wasting your time if you do not look for the right context. Having access to big data has no point if you cannot understand them. And for this, you need to think, reason, and study. I believe that the ability to do these things is gradually fading in today's world. It is impossible to measure the degree of degradation, but I bet: it is degradation that is happening now."* [9; p.107].

**4.3.Religion**

It seems absurd to imagine the introduction of digital technologies to religion. Still, religious leaders are enthusiastic about the emergence of new devices that will allow them and their supporters, without violating religious prohibitions, to feel as comfortable as possible in modern society. A successful example of the application of technology can be called a specialized mobile phone manufactured by the Israeli division of Motorola of the company MIRS. Developers from MIRS released the device with all the additional features and positioned it as a mobile phone for true-believing Jews. The phone from MIRS cannot work with the Internet and the messenger, and access to erotic services is blocked. Such a mobile phone has become very popular in Israel. Against the backdrop of ever-growing sales, the Israeli division of Motorola seriously thought about starting to supply such mobile phones to Jewish communities outside of Israel.

The Samcom Ilkone i800 mobile phone has unique features to help Muslims perform religious rites. So, the full text of the Koran in Arabic and

English is recorded in the phone's memory, and the device is equipped with an automatic "reminder" that will inform the user in time that it is time to pray. In addition, the device is equipped with an electronic compass that indicates the direction to Mecca.

There are other "weird" religious applications. For example, PrayerMate allows you to count how many times and for whom you prayed and set yourself reminders. The Catholic smartphone application The Sanctuary is a virtual visit to the cathedral. In it, you can put a candle for the repose, sing psalms or pray and post the broadcast on Twitter or Facebook.

Unfortunately, believers' religious gadgets and technological innovations are still working to limit human freedom. With the help of electronics and ingenious mechanisms, the believer defends himself from temptations, a priori considering the strength of his spirit to be insufficient.

However, it is forgotten that a sincerely believing citizen will not use ungodly services and violate traditions laid down centuries ago. At the same time, a person whose faith is not deep enough will still find a way to touch the forbidden, no matter what protective functions the developers equip gadgets with.

Another project working on the transformation of analog technologies and physical objects into digital ones is the Metaverse [13]. On October 28, 2021, Meta* co-founder Mark Zuckerberg's Facebook Connect 2021 presentation took place online.

Zuckerberg talks about the universe he is creating:

> *"Many people think a metaverse is a place, but one definition of that is a time when immersive digital worlds are becoming the primary way we live and spend time. I think it's a reasonable design".* [13]

According to the creators of the metaverse, society will have such advantages as communication through avatars, users will have a virtual home Horizon Home, and workplaces will be equipped with the Horizon Workrooms service. People will communicate with each other using avatars. Users can play sports and games with augmented reality in different parts of the world.

However, it is difficult to answer the question, "what exactly will the Metaverse give us?". Most likely virtual reality is an economical move. It is needed not by ordinary users but by large companies. There they will be able to dictate their own rules and distribute their products without fear of failure, as the meta-dimensional will unite people with different preferences, where there will be someone who is interested in the proposed product.

It is believed that the beginning of the process of digitization of society was laid from the moment of the commercialization of the Internet in the 1990s, and in a couple of decades it covered the entire society, continuing to digitize it more and more every day. Stolterman and Force define digital transformation as changes associated with the use of digital technologies in all aspects of human life. In their opinion, digital technologies are now part of human life, and people are more and more aware of the world through information and information technologies [7; p.687-692].

**4.Conclusion**

There are two major impacts of digitalization process on social environment, and both are complimentary and mutually reinforcing in nature - separation of processes from and at the same time, complete alienation of person, almost deprivation of sovereignty in private life. For these reasons, as experience shows digital innovations do not always remain popular among people for a long time, and often society forgets about them, returning to the usual means. For example, the advent of 3D TVs created a considerable stir among people, but now almost no one uses this feature. People "played enough" with the new digital introduction and returned to the normal traditional TV viewing. Now we observe the strong interest in electric scooters; they appeared in every park in a short time. However, given the past loss of interest in many digital innovations, it is safe to predict this in this case as well. McLuhan wrote:

> *"Man becomes, as it were, the sex organs of the machine world, as the bee of the plant world, enabling it to fecundate and to evolve ever new forms."* [4; p.46]

The introduction of technology into authority, the economy, and other institutions has already settled too firmly to "get bored" over time. It is difficult to predict the severity of further impact; Since society is adapting faster and faster and welcomes the digitization of everything that is even harder to imagine, the conseqensies are irreversable. By that, a new reality is being created. But this new reality is not a mare dependency on digital processing, the way society depends on energy supplies. The point is that at the very end the ultimate control over humanity is still being implemented by humans. The technology itself cannot implement the control without any human intrusion. It just provides unprecedented means for such intrusion *"... especially by replacing human technologies with non-human technologies ..."* [6; p.148]. Technologies, replacing a person, making him dependent and easily manageable. That means, digitization, still being an objective trend,

has decisive consequences over social environment, when the very sovereignty of human as a social object is being questioned.

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# Rəqəmsallaşma prosesi: nəyə gətirib çıxardı və gələcəkdə bizi nə gözləyir?

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**Abstrakt.** Bu günə qədər texnologiya həyatımızın ayrılmaz hissəsinə çevrilib və ondan istifadə etmədən bir günü təsəvvür etmək demək olar ki, mümkün deyil. Cəmiyyətin rəqəmsallaşması hər gün sürətlənərək həyatın bütün sahələrinə təsir edir: insanlarla ünsiyyət və bütün hökumətlərin idarə olunması. Bu və ya digər dərəcədə rəqəmsal texnologiyalardan istifadə cəmiyyətin qurulduğu hər bir sosial institutda müşahidə oluna bilər. Prosesə müasir texnologiyaların cəmiyyətə tətbiqi və sosial nəzarətlə bağlı sosial dəyişikliklər daxildir. XX əsrin ikinci yarısından başlayaraq rəqəmsal texnologiyaların tətbiqi müasir cəmiyyətin inkişafına mane olan zaman və məkan məhdudiyyətlərini, subyektivliyin neqativlərini aradan qaldırmaq vasitəsi kimi qəbul edilir. XXI əsrdə rəqəmsal texnologiyaların təsiri əhəmiyyətli dərəcədə artmışdır ki, bu da insanın özünün sosial obyekt kimi suverenliyini şübhə altına alır. Şübhəsiz ki, texnologiya vaxta qənaət, yeni məlumat əldə etmək və gündəlik həyatı sadələşdirmək kimi üstünlükləri ilə həyatımızı daha əlçatan edir. Lakin obyektiv rəqəmsallaşma nə qədər çox sosial məkanı ələ keçirirsə, bu məkan bir o qədər subyektiv təsirə məruz qalır. Rəqəmsal texnologiyalar subyektiv nəzarətdən azad deyil, əksinə, buna öz töhfəsini verir. Məqalədə bunun cəmiyyətin aparıcı sosial institutları məkanında necə baş verdiyini nəzərdən keçiririk. Bundan əlavə, sosial sahənin rəqəmsallaşmasının nəticələri aşkar olunur.

**Açar sözlər:** rəqəmsallaşma, rəqəmsal transformasiya, sosial institutlar, rəqəmsal texnologiyalar, sosial nəzarət

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# Процесс цифровизации общества: к чему он приводит и что ожидать в будущем?

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**Абстракт.** На сегодняшний день технологии настолько сильно влились в нашу жизнь, что практически невозможно представить и день без их использования. Оцифровка общества набирает скорость с каждым днем, влияя на все сферы жизни: как на коммуникацию с людьми, так и на управление целыми государствами. Применение цифровых технологий в той или иной степени можно наблюдать в каждом социальном институте, на котором строится общество. Процесс включает в себя социальные изменения, связанные с внедрением в общество современных технологий и социальным контролем. Со второй половины XX века внедрение цифровых технологий рассматривалось как средство преодоления временных и пространственных ограничений, негативов субъективности, тормозящих развитие современного общества. В XXI веке влияние цифровых технологий значительно выросло, что ставят под сомнение суверенность самого человека, как социального объекта. Безусловно, технологии значительно облегчают нашу жизнь, обладая такими преимуществами, как экономия времени, доступ к новой информации и упрощение повседневной жизни. Однако, чем больше социального пространства захватывает объективная цифровизация, тем больше это пространство подвергается субъективному влиянию. Цифровые технологии не освобождают от субъективного контроля, а наоборот, способствует ему. В статье мы рассматриваем то как это происходит в пространстве основных социальных институтов общества, кроме того, выявляются последствия цифровизации социальной сферы.

**Ключевые слова:** цифровизация, цифровая трансформация, социальные институты, цифровые технологии, социальный контроль

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