Some Peculiarities of Big Data Legal Regulation in the Digital Age

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Abstract. The paper discusses the legal features of digital economy formation. It is shown that the digitalization should be treated as a complex phenomenon, which includes both the formation of knowledge economy and the modernization of existing institutions, including the institution of law. A number of socio-economic phenomena associated with digitalization are described. The idea of eventual degradation of a number of institutions is formulated. The possible transformation of law towards its fragmentation is discussed. The risk of loss of state control over the field of law due to the high degree of commercialization of digital technologies is formulated. It is proposed to use the practice of legal regulation of megascience facilities to form a stable regulatory system taking into account the relationship between man, science, the state, society and nature. Examples of soft law and hoflaw in the field of legal regulation of scientific activity are presented. The idea of the need for an integrated approach to the development of digital technologies is formulated. These efforts should include the development of existing institutions, taking into account the emerging risks and challenges.

Keywords: Digital technologies · Legal regulation · Institute of law · Law of science · Smart content · Big data · Digital future

1 Introduction

The pace to digital future is inevitable all over the World. For many countries the introduction of digital technologies is currently considered as one of the tools to ensure technological independence and successful modernization development, supporting the transition to the next technological mode. The policy of introducing new technologies is also combined with existing peculiar national-wide problems that are not objectively dependent on the development of digital technologies: disengagement of territories and complex logistics; uneven economic development of regions, socio-political challenges, etc.

The introduction of digital technology is reflected in such a social institution as law. Its transformation (both forced and conducted by the state), has a serious impact on the possibility of sustainable economic growth, and produces a number of new risks and challenges that are institutional in nature. Moreover, many risks and challenges are not
new and often repeat those already existing in human history [1]: some negative aspects of the development of digital technologies make transparent what has taken place and developed independently previously.

2 Main Objectives

This paper contains the results of the scientific research carried out within the framework of the RFBR project No. 18-29-16130. This work is devoted to the study of the peculiarities of legal regulation associated with the introduction of digital technologies (including big data, artificial intelligence technologies, etc.).

3 Socio-economic Aspects of Digitalization

It is too early to state which institutions precisely will be transformed most in the near future under the influence of innovative technologies. The analysis enables one to identify a number of main trends. However, it is impossible to conclude which course will be preferred (chosen) by the society. Obvious manifestation of this fact is the unformed glossary of digital technology and the “vulgarization” of many terms (e.g., one to be mentioned – “artificial intelligence”).

Within the framework of our research, we have formulated the following series of trends that accompany the digitalization processes that are important from the point of view of this study.

Firstly, various methods and approaches used to gather, process and store data have a significant impact on the formation of the digital ecosystem. As an example, it is worth to note the big data technology in relation to which a single conceptual and regulatory apparatus has not been formulated yet: it is technically customary to characterize “big data” by a set of properties [2]. From a business point of view, big data technology is a process that provides insights into decision making [3]. In jurisprudence, disputes continue [4] whether to understand “big data” as a process or an object (for example, one considers the opportunity to treat “big data” as an anomalously large database with specified properties).

Secondly, digital technologies are often understood as ready-made solutions (in extreme cases, as identified correlations according to criteria a priori). The “knowledge environment” is replaced by the “environment of ready-made solutions”: the proposed solutions are notorious for their apparent universality of answers. In fact, we are talking about hidden subjectivity [5] and the degradation of scientific thinking skills [1] in favor of correlation approach.

Thirdly, two opposing trends have been outlined: on the one hand, data depersonalizing (i.e., reduction of data knowledge to methods for ranking and sorting data based on self-learning algorithms). This phenomenon is called “Smart Content”, which is characterized by fewer than the current number of variables, along with the ability to convolution and data recovery. On the other hand, there is now an active request for the creation of the reverse algorithms (data de-anonymization ones). This process is initiated both by private companies in order to maximize profits, and by state institutions
in order to gain and persist control. The latter trend is most remarkable in Chinese social rating policy.

Fourth, in the social sphere, attempts to combine universal digitalization and human rights led to the “open data” concept. This approach (traced from CERN experiments) suggests that all scientific knowledge and the achieved results of scientific activity, financed from public funds and/or from the state, should be in the public domain [6]. In relation to personal data (not involving personal identification), it is proposed to use the concept of “no one's data” (“common data”) [7]. The idea of maximum openness of the society and the economy (open data) is currently being seriously discussed as an alternative to the concept of maximum protection of intellectual rights and the right to protect personal information [8].

Fifthly, the policy of localizing data centers is politically biased. The authorities strive to control physical entities based on the positive experience of “property law”. This leads to the need to develop the appropriate infrastructure of the digital economy for example [9–11], which includes both physical data centers and numerical and analytical methods and approaches [12], including big data, artificial intelligence technologies, etc. Thus, in Russia the President’s decree on the development of high technologies in Russia was approved, which provides for the construction and reconstruction of the five largest facilities of the mega-science class [13]. A similar policy is carried out in other countries, too [5]. Also, China's success in the field of big data regulation, thanks to the centralized collection of data on a large number of objects, has led to a close examination of the experience of the Chinese model in other countries. Especially this practice was in dire demand in experiments on managing the situation during the Covid-19 pandemic.

Sixth, socially at the international level, digitalization is seen as another manifestation of globalization, since there is no division among countries, there is a high interconnection of technologies and approaches.

Seventh, digitalization is increasingly understood as a process identical with commercial success and cost reduction. As a result, digital giants, repeatedly increase their capitalization and influence, become monopolists in providing access to information, distorting the functioning of the market [14].

4 Digitalization and the Institution of Law

Authors claim that the change in the institution of law in the course of digitalization is characterized by the following aspects.

Firstly, there is a decrease in the role of the state as a lawmaker and an increase in the importance of NGO institutions in the formation of regulatory approaches. Accelerated digitalization is largely explained by the commercial success of digital technologies, which leads to the fact that the regulation of digitalization issues is transferred to the relevant processes actors [10]. They, for their part, establish rules on the fact (based on market interest); the rules they introduce become mandatory not only for business, including competitors, but also for the average citizen (“consumer” in modern terminology). The introduced changes have a fundamental impact both on the
structure of the economy and on the institutional structure of society. The visible effect of such processes can be called “digital expropriation” [15].

The seemingly universality of the proposed solutions, their apparent isolation from subjective preferences leads to the expropriation of human rights as an institution. Relying on a “computer solution” as an explanatory factor in case of a denial of law is a common feature of our time. The computerized decision-making process becomes a component of the 21st century state economy [16].

Secondly, there is a deformation of law due to changes in the nature of production processes in the digital economy [17]. A new reality is accompanied by pronounced processes of degradation: the development of digital technologies displaces high-tech (and, therefore, costly) production processes in favor of low-tech (cheaper) ones. At the same time, new players in the market are trying to create their own platforms - the “blue oceans” in the terminology of the Club of Rome, using digital technology to circumvent current legislation, working conditions and fiscal systems. Accordingly, the development of digital business without proper consideration of public interest is a source of bias in the entire structure of the economy in favor of easily profitable low-tech processes (including the widespread adoption of platform solutions), and with it the structure of the economy and society as a whole.

It is believed that companies such as Uber or food delivery services distort the existing structure of economic entities and, in their current form, do not meet sustainability criteria (i.e. their users do not share the general costs, e.g., for the urban infrastructure used by drivers, etc.) These business projects may contain a real danger of uncontrolled development, an increased risk of monopolization and unethical use of technology, and it is not yet clear how to avoid these threats [18].

The presence of “old” norms and rules comes into conflict with the development of digital businesses: digitalization supporters are trying to remove established institutional barriers. Among these barriers there are the basic institutions of society, such as law. Thus, the law acquires not only a previously unused source, but it should also be expected that the institution of legalization of “corporate” law will be developed, having in mind not a legal term, but a law dictated by corporate interests and aimed at all those who have relations with the corporation: including not only consumers, but also other interested parties. This process forms new externalities or the so-called “External effects of the corporation” [19].

With that said, thirdly, we should expect the effect of fragmentation of law. This suggests (due to the multiplicity of sources) that the law will be different in various parts: it will be distinguished both by geographical criterion, by technological or sectorial characteristics, etc. It is noteworthy that this is not only about the formation of new branches of law, but about the formation of various zones of law enforcement and jurisdiction.

Note that over the past few years there has been a discussion about the need to legalize a new set of human rights - digital rights. The idea of expanding the concepts of an individual and a legal entity is discussed: for example, the idea of a digital profile is proposed as a set of information about citizens and legal entities contained in the information systems of state bodies and organizations that exercise separate public powers in accordance with federal laws, as well as in a unified identification system and authentication. In this case, the difference between digital identity and real is allowed [20]. And –
fundamentally – this “right” ceases to be a right subordinate to public control, including in the form of state institutions.

In our opinion, there is a challenge to the loss of state control, its transfer to other agents (both authorized by the state and those who received these opportunities in an explicit manner). Overcoming the difficulties is possible by creating regulatory institutions that provide control over the development of digital business, the digital economy as a whole and in its separate parts, including the creation of comfortable legal conditions for the introduction of new technologies in the economy. In practice, we are talking about the transition from law in the form of requirements to law in the form of management.

In the context of the digital economy, one should expect acceleration of the process of shifting the law from the model of “rules” to the model of “operational management” (arising seignorate). It is this model that removes the obstacles to the regulation and operational tuning of digital processes being built. Furthermore, digital technology is an effective tool for such a senior. And in this “state” version, there is a pronounced risk of fragmentation of the right to certain legal seignorates, equivalent to the reincarnation of territorial feudalism in the form of guild feudalism. There is a perceptible risk of a return to previous generations of law, a rejection of a group of human rights and freedoms (new in content and in the form of realization that arose in the second half of the 20th century – Fig. 1). The flip side of the coin threatens to be the regulation of all legal processes to the complete impossibility of implementing effective business management of private companies (such as tightening regulatory measures under the GDPR [21]).

Fig. 1. Legal chronicles of big data
5 The Role of Science in Future Basics of Law Formation

The expected development of digital technologies (artificial intelligence, big data, etc.) no longer refers to purely scientific issues, but represents an important component of both business processes and government management. The main problem of new technologies is an attempt to “embed” them into the existing structure of society without taking into account possible societal consequences. This approach is explained by the commercial success of digital technologies, but expectations to transfer the experience of using big data technology from retail, social networks, financial sector to the life of society as a whole seem to be overestimated and unrealizable in full in the near future.

Awareness of current trends, risks and threats associated with digitalization should be accompanied with the understanding that society (represented by the state) sets the rules and regulations for business, and not vice versa. That is why it becomes socially necessary to formulate a thoughtful and effective regulatory system concerning the relationship between man, science, the state, society and nature. Although the prohibition and restriction policy seems to be the simplest solution to emerging problems, this approach is not fruitful. In the applied aspect, it is possible that part of such a system of future regulation could belong to the newly formed integrated branch of law – research law (the law of science) [22].

Currently, most countries understand the importance of high-tech for the development of society. Mega-science projects based on international cooperation are actively being created in the world for basic research in various fields. Main traits of such projects together with peculiarities of international scientific cooperation shape a number of features in the regulation area (such as risk sharing, financing, responsibility, etc.).

In the scientific sphere, soft law mechanisms currently dominate. Examples of soft law implementation in science are CERN (Conseil Européen pour la Recherche Nucléaire, European Organization for Nuclear Research) and NICA (Nuclotron-based Ion Collider Facility) projects. For instance, there are 18 participants in the mega-science project NICA [23], and questions about the financing of the project and the allocation of time are defined in internal regulatory documents. The rights to the result are determined by the participants in a separate memorandum of understanding, which avoids the so-called “over-regulation”.

For Large Hadron Collider (LHC) to operate, the CERN bodies, in the framework of their organizational and administrative powers, issue binding normative acts that determine the general rules for the creation and functioning of international scientific collaborations [24]. LHC collaborations have their constituent documents under the general name “Memorandum of Understanding”, which is a soft law mechanism that allows members of the collaboration to agree on their positions.

A similar approach was adapted for the International Experimental Thermonuclear Reactor—ITER [25]. The basic documents establishing the legal status of the ITER mega-science facility are the Agreement on the Establishment of the ITER for the joint implementation of the ITER Project and the Agreement on the Privileges and Immunities of the ITER for the joint implementation of the ITER Project. They formulated
key conditions for the creation and operation of the project, determined the basic principles for financing the ITER mega-science facility and the distribution of costs between project partners.

We note that all these examples prove scientific groups to work comfortably and interact profitably in the absence of strictly legal regulation. Main aim of the collaboration (to achieve some scientific goal) force participants not to violate their obligations. This (disinterest in violation of obligations), however, does not completely exclude a possible dispute between partners. At the moment, there is already a practice of satisfying the claim of violation of the moral obligation of the party [26], which gives grounds to assert soft law to turn binding, and actually we face new form of regulations – so called “hoftlaw”.

6 Conclusions

The technologies considered in this paper are not socially neutral – they, at the same time, as they offer society new opportunities and solutions, are a source of serious social risks and challenges. The search for ways to accelerate the development of innovative digital technologies as much as possible should make them routine, a lag in this matter can seriously undermine the country’s security. There is a high probability that in the field of the prominent digital technologies (including artificial intelligence) we will soon see a real digital race – similar to nuclear, space and supercomputer ones.

But, in general, the continued total implementation of digital technologies carries a number of risks, seriously changing existing social practices. There is a high probability of deep deformation (up to a complete shift) of the basic institutions of the society in favor of institutions that provide more effective and uncontested control of business over society and its institutions.

It is necessary to seek other methods and approaches to regulation, including a clear ethical framework for interaction with regard to digital technologies. In general, deep socio-theoretical models of the basic institutions of society in the era of digital transformation are needed. One of the possible theoretical and economic tools seems to be the idea of an institutional trap as a factor determining the direction and limitations of the society development [27].

Another requirement (in the moral and ethical area) is the anthropocentrism principle. This approach is already being implemented in the European Union and, taking into account the situation with the coronavirus pandemic (the importance of human life to be strictly articulated), one should expect the spread of this practice in territories with similar values [28].

In the field of law, it seems possible to develop adequate mechanisms of legal regulation in the digitalization era (taking into account the high role of technology in society), drawing on the experience of international scientific groups working with mega-science projects based on soft law and hoftlaw. The authorities will constitute and thrust their purposes, and the role of the governmental institutions (or society’s structures associated with the state interests) will doubtlessly increase.

Ongoing international cooperation (and, in particular, joint financing, distribution of risks and rights to the results of work) require great flexibility in regulatory matters.
The high degree of interdependence of participants, the real globalization of all aspects of life, leads to the fact that the use of soft law and semi-rigid law (whose main strength lies in the high degree of persuasiveness and effectiveness of their inherent scientific objectivity of logic) seems more relevant in modern conditions than the use of binding law [22].

Totally, in order to overcome the emerging risks and challenges in connection with the digitalization processes, it is necessary to form a comprehensive attitude to technological development. It requires not only formal rules and regulatory mechanisms, but also the development of public understanding of the processes of introducing innovative technologies.

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