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Legal aspects of the use of cloud technologies

Правові аспекти використання хмарних технологій

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Abstract

The relevance of the article due to the need for the legal regulation of relations regarding the use of cloud computing that have already involved in the most important areas of public life. Currently (along with the undeniable benefits), there are many problems caused by the use of cloud technologies. The current legislation needs to be modified to create a regulatory platform, remedies, and factors to prevent or prevent illegal activity. The authors of this article have used various methods of scientific research, namely the analysis, synthesis, analogy, deduction, induction, formal-legal, comparative-legal, interpretation of law, etc. The study shows that there is currently no legal regulation in Ukraine on the use of cloud technology. Today, it is possible to distinguish several ways of legal regulation of relations on the use of cloud technologies: 1) legal regulation of these relations can be done using already existing regulatory acts; 2) amend the existing legal framework (adaptation of stable legal norms to the new information reality); 3) to create new legal acts on the regulation of exclusive relations related to the use of cloud technologies, taking into account their specifics.

Key Words: legal regulation, cloud computing, information technologies, legal norms, legislation.

Анотація

Актуальність статті обумовлена необхідністю правового регулювання відносин з приводу використання хмарних технологій, які вже проникли в головні сфери суспільного життя. Наразі (поряд із безспірними перевагами) існує багато проблем, які викликані використанням хмарних технологій. Чинне законодавство потрібно реформувати для створення нормативно-правової платформи, правових засобів і чинників для попередження або унеможливлення незаконної діяльності. При написанні даної статті авторами були використані різні методи наукового дослідження, а саме аналізу, синтезу, дедукції, індукції, формально-логічний, порівняльно-правовий, тлумачення правових норм тощо. Проведене дослідження свідчить про відсутність наразі в Україні правового регулювання питання використання хмарних технологій. На сьогодні, можливо виокремити декілька шляхів правового регулювання відносин з використанням хмарних технологій: 1) правове регулювання даних відносин можливо зробити використовуючи вже наявні нормативно-правові акти; 2) внести зміни до вже існуючої нормативно-правової бази, тобто адаптування сталих правових норм до нової інформаційної реальності; 3) створити нові правові акти, присвячені регулюванню виключно відносин, пов'язаних з використанням хмарних технологій, максимально враховуючи їх специфіку.

Ключові слова: правове регулювання, хмарні технології, інформаційні технології, правові норми, законодавство.

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Introduction

Digital technologies have long become a part of social life. They covered all spheres of human life, economics, medicine, sports, training and more. Digital technologies greatly improve human existence, but there are also several problems with their use. These can be problems of moral, economic, psychological nature, problems of legal nature, etc., which arise due to the use of information technologies by society. This article will address the legal nature of cloud technology. Currently, cloud technologies are actively used in medicine, e-sports, banking, retail, insurance, and more.

The relevance of the article is because cloud computing occupies one of the leading places in the list of modern information technology priorities. Unfortunately, the lack of legal regulation not only jeopardizes the interests of those involved in cloud technology. Moreover, the lack of legal regulation hinders the development of this sphere, because, without proper protection of the interests of the parties to such relations, individuals do not want to participate in these relations.

For the first time, digital cloud services were introduced in 2006. It happened when Amazon offered its customers to buy and use remote storage capabilities.

It should be emphasized that the positive features of the technology model of cloud services are that their customers have the opportunity not to spend their own money to create and maintain digital technologies and equipment, but instead buy technological infrastructure and computing power from providers. Moreover, it should be emphasized that cloud computing is a technology (technological model) of remote access to the general fund of configurable computing resources (servers, storage devices, data networks, applications, etc.) (Antonopoulos, & Gillam, 2010). During the use of cloud technologies, software and hardware are provided to the user as an Internet service; moreover, he has access only to his data and not to the infrastructure, operating system and software which he works with (Gladkivska, 2014).

In addition, there is currently a process of so-called digitization of law. That is, new social relationships related to the use of cloud technologies (sales, intellectual property rights, defaults, etc.) need urgent legal regulation.

Thus, the use of cloud technologies has a wide range of advantages, but the process of establishing a regulatory platform remains open, for example, regarding the regulation of the interaction between the service provider and the user. Therefore, the purpose of this article is to identify public needs for the legal regulation of the use of cloud computing in society.

Theoretical framework

Currently, there are many scientific articles and works on the topic of cloud technology. The scientific literature on this topic studies cloud computing from different sides. For example, there are many works devoted to the technical problems of modeling, use, development, maintenance of cloud computing (Kuchuk, 2013; Melnyk, & Kozak, 2010; Antonopoulos, & Gillam, 2010; Jones, 2012; Valentinova, 2009).

Some scientific works are devoted to the interaction of cloud technology and education. For example, Denisova (2014) states that cloud technology covers all levels and aspects of teaching activities from the use of information technology training in teaching discipline to the introduction of higher education management systems. Lustopad and Olyzarovich (2012) believe that using cloud technology can create a virtual learning environment in which a student not only gets access to study materials but also can immediately begin work on the task.

Moreover, there are articles on the use of cloud technologies in the sphere of government work. For example, Witer and Ambusher (2014) consider that the cumbersome information infrastructure of the existing government requires significant changes and can be implemented based on new approaches and technologies. Creating a national cloud requires the unification of state business processes, which is an important step towards creating e-government. It is necessary to take into account the regional aspect (the degree of development), abandoning a single universal approach.

In addition, in the process of creating this article, particular attention was paid to the works of domestic scientists devoted to the legal regulation of the use of information technology (for example, Yudin, Zubin, R., & Zubin, T., 2013; Yudin, & Zubin, 2014). The works state that the legal mechanisms need to ensure the information security of users of cloud computing (Gladkivska, 2014). Moreover, it is stated that

the legal framework should facilitate the free trade of such services and create conditions for the development of these relations.

Moreover, foreign scientists are dealing with the problems of legal regulation of the use of cloud technologies. For example, Gayurov (2010) studied the problems of civil law regulation in the Republic of Tajikistan. Cody Ruegger (2013) wrote about the legal aspects that arise during the use of cloud technologies. Shakel (2014) studied the general legal aspects of the use of cloud technologies in Russia, while Melikov (2016) studied the problems of civil law regulation of cloud technologies.

As a result of the analysis of scientific literature, it was revealed that among the scientific works there is no complex understanding of the path that the legislator should go to regulate these relations in Ukraine.

Methodology

To conduct this study, the authors used general scientific and special legal methods of scientific research.

It should be clarified that the methods of analysis, synthesis, analogy, deduction, and induction are among the general scientific methods that are used in almost every qualitative scientific research. Without diving deeply into the content of the above methods, let us outline in general terms their essence:

Analysis - the disintegration of the whole object into its constituent parts (parties, signs, properties or relationships) for the purpose of comprehensive study.

Synthesis is a combination of previously selected parts (sides, signs, properties or relationships) of an object into a single whole. However, this is not just their combination, but also the knowledge of the new - the interaction of parts as a whole. The result of the synthesis is a completely new formation, the properties of which are not only the external combination of the properties of the components, but also the result of their internal relationship and interdependence.

Analogy is a way of gaining knowledge about objects and phenomena on the basis that they have similarities with others, an argument in which, based on the similarities of the objects being studied, in some signs, a conclusion is drawn about their similarity in other signs.

Deduction is a way of gaining knowledge about objects and phenomena on the basis of the fact that they have similarities with others, a reasoning in which, based on the similarities of the objects studied, in some signs, a conclusion is drawn about their similarity and other signs.

Induction is a research method and a method of reasoning in which the general conclusion is based on private premises. It is necessary to investigate individual objects, to find in them common essential features that will serve as the basis for knowledge of a common feature inherent in this class of objects.

In addition to general scientific methods, the authors of the article, of course, used special legal research methods.

These are the methods of scientific knowledge produced by the theory of law for the most objective and complete study of legal reality. These include the following methods: formal-legal, comparative-legal, state-legal modeling, state-legal experiment, forensic statistics, interpretation of law, etc.

In this particular case, the authors mainly used a formal-legal, comparative-legal, method of interpreting legal rules.

The formal-legal method has made it possible to investigate the relationship between the internal content of legal regulation of relations concerning the use of cloud technologies and the form of their existence in real life. In particular, this made it possible to conclude that there are significant differences in the legal regulation of these relations with "traditional" public relations, since "cloud" resources may be physically located in different jurisdictions with the user, and therefore there may be problems of conflict of law.

The comparative legal method is based on the comparison of different models of legal regulation of relations regarding the use of cloud technologies in order to identify common and different between them, as well as to develop proposals for improvement of the current legislation in the relevant field.

The method of interpretation is a set of techniques for analyzing legal norms, revealing their meaning (content) for practical implementation.

The method of interpretation was used by the authors of the article to analyze the current

domestic and foreign regulatory legal acts that regulate relations on the use of cloud technologies, which also made it possible to single out those attacks and norms that could be implemented in domestic legislation.

Results and discussion

At present, the leading countries of the world are trying to keep up with the rapid development of information technologies and to provide regulatory and legal regulation of this type of social relations. Meanwhile, it should be noted that the legislation of Ukraine does not regulate the use of cloud technologies as such, but in the approved decree of the Cabinet of Ministers of May 15, 2013 "Strategies for the development of the information society in Ukraine" uses the concept of cloud technologies, namely in the clause that provides for the formation of a modern information infrastructure: "... creation and use of supercomputer systems, based on "cloud computing".

If we talk about the preconditions that complicate the process of legal regulation of the use of cloud technologies, the following should be mentioned. First, it is an increase in the amount of data transmitted over the Internet. Secondly, it is a high speed of introduction of cloud technologies in different spheres of public life. The last prerequisite is an increase in the number of people who are able to use cloud technologies. For example, legislation related to intellectual property and copyright should be amended and rules should be introduced to enforce effective sanctions against the misappropriation and use of information circulating in the cloud.

Any legal regulation aims at improving and facilitating public relations in various areas of human life. Civil society – is a unique system of interaction between social individuals, social groups, layers and strata, which balances the vectors of its components (Kharytonov, Kharytonova, Tolmachevska, Fasii, & Tkalych, 2019). Legal norms are aimed at securing the rights and interests of persons involved in certain legal relations. Currently (along with the undeniable benefits), there are many problems caused by the use of cloud technologies. The current legislation needs to be modified to create a regulatory platform, remedies, and factors to prevent or prevent illegal activity. This should be done because, for example, unauthorized activity in the cloud environment, such as the use of unauthorized user-assigned digital IDs, data fraud, breach of operating systems and underlying software, is a threat to both cloud

users and service providers (Yudin, & Zubin, 2014).

In addition, thanks to data security, government agencies and departments responsible for information and communication technologies can use cloud services. All activities of state bodies should be clearly regulated by legal acts. Foreign (European) legal instruments should also be addressed and analyzed to regulate the use of cloud technologies. Such an analysis will allow us to identify positive experiences and open up opportunities for the implementation of such legal norms in Ukraine.

Moreover, in 2012, the European Commission adopted the Unleashing the Potential of Cloud Computing in Europe (2012) strategy, which is the result of an analysis of common political, regulatory and technological landscapes and encourages the use of cloud computing in all sectors of the European economy. It identifies three key areas. First, it is necessary to create secure and fair contract conditions to regulate relationships using cloud services. The second aspect is the need to unify a large number of existing standards in the field of cloud computing. The third area is the creation of a European "cloud partnership".

The requirement to ensure the security of personal data and to protect their integrity is key in European law, which imposes on the data processing operator the obligation to take the technical and organizational measures necessary to protect personal data from an accidental or unlawful destruction, loss, etc. The change to the attitude to human rights approaches to the vision of the essence of law, lead to the change in the vectors of research in the field of private law (Kharytonov, Kharytonova, O., Kharytonova, T., Kolodin, & Tolmachevska, 2019).

Thus, for example, in the Czech Republic in 2013 the Law on the protection of personal data in cloud services was adopted. This law partially regulates relationships related to the use of cloud services. This law defines the terms "cloud computing", definitions of data processor concepts, rules concerning the transfer of personal data outside the Czech Republic, as well as clarification of standard terms of cloud services agreements and mandatory corporate rules.

Speaking about the possible regulation of relationships in the field of cloud technology, it should be noted that there are several ways to create a legal array.

First, the legal regulation of these relationships can be done with existing legislation. Such documents already contain legal provisions that can be applied to this type of public relations. These are general legal norms that are universal and can regulate almost all social relations. The difficulty is that cloud technologies have their characteristics that will be ignored in this approach. This may violate the rights and interests of individuals. In such a case, it is desirable to ratify international normative acts in addition to domestic legislation.

Another possible way is to change the already existing legal framework, to adapt stable legal norms to the new information reality. This approach is more flexible than the previous one. It involves introducing or modifying existing legal structures and adapting them to regulate relationships regarding cloud technologies. This way of legal regulation seems to be the most optimal.

It seems that the current legislation of Ukraine does not meet modern realities regarding the peculiarities of regulation of relations arising from the use of cloud technologies. In this regard, there is a need to reform the current legislation in the following areas:

it is necessary to provide an opportunity, using the tools of civil law, to regulate the relations arising in the framework of the use of cloud technologies, not only to state authorities and local governments, but also to individuals and legal entities;

it is necessary to regulate the transfer of data and information to other countries (to other jurisdictions).

it is necessary to introduce specialized regulation for the provision of a public cloud service, since the agreements concluded when providing a public cloud service are typical, and there is no possibility to amend such agreements, while such agreements are concluded with individuals who are not able to properly protect their personal data and created copyright objects;

it is necessary to determine the responsibility of all entities involved in relations arising from the use of cloud technologies, namely: mandatory requirements for ensuring data security and confidentiality, issues of authorship of the generated results of intellectual activity, protection of copyright and related rights, level of cloud service provision and other aspects;

In particular, these standards may be included in a Law of Ukraine "On Copyright and Related Rights" of 23.12.1993.

The use of intellectual property stored on servers, including when using cloud computing can be considered and regulated by different parties. On the one hand, regulation may relate to the use of software for the performance of cloud computing itself. On the other hand, the legal regulation of a party related to cloud technology can relate to the results of intellectual activities stored in cloud computing. There is a practice that in violation of the rights to the results of intellectual activity, which the user saves in cloud computing, he or she is responsible for it. In cases where copyright infringement is related to a cloud computing software problem, the responsibility lies with the provider (Melikov, 2016).

However, there is a point of view that completely new legal instruments should be created to regulate exclusively relationships related to the use of cloud technologies. This is the most radical path. Such a path requires considerable effort from both the state and the legal doctrine. Moreover, the argument for using this particular type of cloud-based public relations regulation is that this approach can take full account of all the specificities of relationships in this field.

For example, the development of information technology in general and the cloud service has led to the emergence of new contractual structures. A new contract for the provision of cloud services in recent years has become SLA (Service Level Agreement). Taking into account the specifics of the relations governed by these contracts, which include both private-legal (contractual) relations and public (security, processing of personal data), SLAs are separated into a separate group of service contracts. The subject matter of the SLA involves connecting the client to the application of the cloud service provider (provider), and the cloud provider assumes the responsibilities of managing the system, monitoring traffic, and customer needs, storing and processing information in cloud technology. Besides, there are various types of provider-user relationship in cloud computing services, called Infrastructure as a Service - (IaaS); Platform as a Service - (PaaS); Software as a service - (SaaS) (Legal risks in SaaS contracts, 2015), etc. All these relationships require legal regulation and regulation.

Conclusions

Thus, it can be concluded, that any legal regulation aims at improving and facilitating public relations in various areas of human life. Legal norms are aimed at securing the rights and interests of persons involved in certain legal relations. The study indicates that there is currently no legal regulation in Ukraine on the use of cloud technology. Moreover, the preconditions that complicate the process of legal regulation of the use of cloud technologies are the increase in the amount of data transmitted through the Internet and the high speed of introduction of cloud technologies in different spheres of public life.

Today, there are several ways in which the legislator can go when creating legal acts to regulate public relations data:

- 1) legal regulation of these relations can be done with existing regulatory documents. Such documents already contain legal provisions that can be applied to this type of public relations. The difficulty is that cloud technologies have their characteristics that will be ignored in this approach.

This may violate the rights and interests of individuals.

- 2) change of the existing legal framework, adaptation of the legal norms to the new information reality. This approach involves modifying of existing legal structures and adapting them to regulate cloud technology relationships.
- 3) to create completely new legal acts on the regulation of exclusive relations related to the use of cloud technologies. This is the most radical way. Such a path requires considerable effort from both the state and the legal doctrine.

In any case, it will be a new law or changes to a law that already exists, but the main directions for regulating relationships in the use of cloud technologies should be as follows:

- to expand the subject composition of legal relations and provide the right to regulate the relevant relations to private individuals. It is fashionable to do this by means of exclusively civil law regulation;
- to clearly regulate the features of cross-border data transfer taking into account the possible different jurisdictions in which the provider and user may be located;

- to elaborate and implement in detail national and international legislation standards in the field of responsibility of individuals and legal entities for offenses in the field of using cloud technologies;
- legal regulation of the use of public cloud services should be more flexible, and the relevant legislation should provide for the right of individuals to duly defend their rights and interests.

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