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Space Law in Ukraine: Current Status and Future Development

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Abstract: The global development of space law in the world requires from Ukraine an immediate response and continuous improvement. The purpose of this study was to analyze the existing international agreements, the Ukrainian legislation on the regulation of the Ukrainian space sphere in order to determine the future directions of its development. In order to achieve the set objectives, the study was carried out by certain stages in a combination of analysis of theoretical material, legislation, and the implementation of practical tasks. The current state of space law in Ukraine is reflected in the legislation that regulates space activities, including in the field of rocket launches, commercial space missions and cooperation with other countries in the space industry. The study analyzed the practical

implementation of these acts on the territory of Ukraine. The focus was on European space law, the participation of individuals and enterprises in the Ukrainian space industry, legal regulation of space debris, the exploration of Mars, countering space cybercrime, and the training of professional personnel, taking into account the most modern methods of education. Ukraine has been actively involved in the development of space law and has ratified several international treaties related to outer space, including the Outer Space Treaty, the Rescue Agreement, and the Liability Convention. In recent years, Ukraine has taken steps to further develop its national space legislation to align with international standards and promote the peaceful use of outer space. Overall, while Ukraine still faces challenges in developing a comprehensive legal framework for space activities, the country is making progress in this area and is committed to promoting the responsible use of outer space. It is recommended that research departments be established at leading Ukrainian universities to train personnel for work in the space industry, using modern approaches to teaching and learning.

Keywords: European Space Agency, space law, space debris, space cybercrime, space education.

Introduction

The possession of information is the future of humanity and every state. Space exploration gives maximum opportunities for the development of the state, its management. Ukraine aspires to join the European Union and is a reliable partner of the international community. This is why it is necessary to introduce a number of amendments to its legislation on modern space developments. Space exploration provides great opportunities for information management. The status of space law in Ukraine directly depends on the development of the entire national space industry and its international cooperation. Therefore, Ukraine's space legislation needs to be developed and improved. In particular, special attention should be paid to the training of scientific personnel, incentives for investments, and investments.

Space activity in Ukraine is becoming more and more relevant, as our country is one of the world's leading producers of rockets and spacecraft. The current state of space law in Ukraine is reflected in the legislation that regulates space activities, including in the field of rocket launches, commercial space missions and cooperation with other countries in the space industry.

Research Problem

The problem of the study is the availability of domestic regulations in the field of space activities, international treaties in force on its territory, the practical implementation of these acts on the territory of Ukraine, and areas of improvement. It has been established that Ukraine has paid less attention and financing to the space sphere recently, focusing on the country's defense. However, it is an authoritative partner in international cooperation. First of all, the question is raised about the implementation of the EU legislation in Ukraine and the development of space law, which would regulate topical world problems.

Research Focus

Forthcoming directions of development of Ukrainian space law were of the greatest interest in this study. Given the constant development of technology, developments in the space industry in the world, Ukraine is primarily interested in the development of space. The following issues are proposed as areas of space law development:

- legal regulation of participation of private entities in state space activities;
- legal regulation of space debris;
- legal regulation of Mars exploration;

- legal regulation of counteraction to cybercrime in outer space;
- training of professional personnel, taking into account the most modern methods of education.

Research Aim and Research Questions

The purpose of this study was to analyze the current international agreements, the Ukrainian legislation on the regulation of the space sphere of Ukraine to determine the future directions of its development.

Objectives of the study: the compliance of national legislation with international agreements in the field of space was analyzed; the peculiarities of legal regulation of space law in Europe were established; the directions of improvement of Ukrainian space law, ways of development of the space industry and space law of Ukraine were highlighted.

The hypothesis of the study: the study found an outflow of personnel to other areas or other countries, insufficient motivation, and incentives. It is proposed to create based on universities powerful departments, with integrated teaching of subjects of legal, technical, economic, scientific direction. Given the relevance of the space sphere at the global level, it is recommended to involve in the educational process the latest research technologies, in particular, digital media, pedagogical coaching.

Literature Review

Akpur (2020) made an attempt to analyze current national and international legal acts, the practice of their application and implementation, as well as to summarize scientific research. Modern foreign and domestic scientists determine the authority of institutions of the rule of law in ensuring the information security of the state and future prospects. Feldman (2015) emphasize that this is a conditionally defined order of sequential implementation of a certain program for the development of national space industries. In the USA, space programs are considered special and are approved administratively. Whereas in Ukraine, space programs are considered comprehensive, and they are adopted in the form of a law. According to Grasis (2021), the modern space industry is an interdisciplinary industry that brings together the best ideas from a wide range of fields, from electronics, programming, telecommunications, and materials science to medicine, chemistry, and the food industry. These are not only space missions, but also communication systems, climate change research and environmental protection. Examining the legislative definitions of this concept, Drozd (2020) analyzes the current legal regulation of Ukraine and Kazakhstan regarding space activities and made it possible to reveal the foundations of scientific and technical cooperation as an integral component of modern international relations. Kostenko (2020) devoted her work to researching modern legal problems in the field of international space law. Today, we are witnessing the rapid and unstoppable development of the space industry. Zabulonov et al. (2021) claims that in countries with developed atomic energy there are various environmental and radiation safety problems that require constant attention and the search for optimal ways to solve them. This, in turn, affects the development of the space industry.

Danyliuk (2021) examines the current realities of the functioning of the State Fund for Regional Development as a budget program within the State Budget of Ukraine, which is important for the financing of space law.

According to Antoni (2020), space security has become increasingly important over the past decade as space becomes part of our daily lives. However, space security is not universally recognized. Several lunar missions, including the NASA-led Project Artemis and China-Russia's International Lunar Research Station, propose a long-term human presence on the moon, which would require mining and using resources on site. This opinion concludes that the current regime of international space law lacks clear laws regarding activities with space resources and emphasizes the importance of the development

of space law for the development of industry and exploration (Bohacek et al., 2022; Dallas et al., 2021); Jakhu & Pelton, 2017; Larsen, 2021).

Research Methodology

General Background

To implement the objectives of the study was carried out in certain stages in a combination of analysis of theoretical material, legislation, and performance of practical tasks. Such stages were: search for state and international legislation, search for legislation of other countries, scientific literature; analysis of these normative legal acts and scientific sources; comparison and comparison of national legislation of Ukraine with international normative legal acts.

The following methods were used for research: dialectical method - to describe the legal regulation of social relations regulated by cosmic law, as well as to overcome contradictions between norms and the need for their improvement. The system method made it possible to characterize the existing framework of legal regulation of space law in their relationship with the norms of other legal institutions, including international law. The structural method was useful for characterizing the construction of norms governing the international standards of legal regulation of space law in Ukraine. The formal-legal method allowed the authors to analyze the meaning of legal norms in the field of international standards of legal regulation of social relations related to space law, to interpret them from the point of view of formal-legal logic. Deduction helped to explore the relationship between international changes and their implementation. Using induction, the impact of negative phenomena in the field of space law was investigated. The conceptual-categorical apparatus was formulated using the logical method, the normative-dogmatic method - the content of normative-legal acts regulating the problems of information security and space law in Ukraine was investigated. The monographic method is useful when studying the relevant works of foreign and domestic scientists who considered the problem. The system-structural method made it possible to investigate the current state and prospects for the development of space law in Ukraine. The generalization method was used to formulate general conclusions.

Sample

The empirical basis of the study were normative legal acts of Ukraine, international agreements, legislation of other countries, scientific works of scientists of Ukraine and other countries.

Instrument and Procedures

In order to implement the objectives, the study was carried out in certain stages in a combination of analysis of theoretical material, legislation, and practical tasks. Such stages were:

1. search of national and international legislation, a search of legislation of other countries, scientific literature;
2. analysis of these normative legal acts and scientific sources;
3. comparing and contrasting the national legislation of Ukraine with international legal acts.

Data Analysis

The system of philosophical, general scientific, and special scientific methods was chosen as the methodological basis. The humanistic method, which establishes the axiological determinants of the role and legal nature of the status of national minorities in the educational sphere, was chosen as the main method. The integrated method made it possible to combine the knowledge and practice of education, pedagogy, public administration, international relations, and law. Synergetic methodology made it possible to determine the gaps of Ukrainian space law and external global processes affecting it.

Research Results

In the current realities, information, information, and space technologies become powerful weapon of states. Integration into the world space sphere is one of the first tasks for Ukraine, which, being in the center of events, uses space technologies, including those of foreign states. All this would be impossible without the development of space, space technology. One of the most significant achievements of humanity of the twentieth century is the development of outer space, which has formed the need for the legal regulation of this area of activity at the international and national level. Ukraine participated directly with other developed countries of the world in the formation of space law. The state made weighty contributions to the development of the space industry in the world. Since gaining its independence, it joined the international documents regulating the use of outer space, developed domestic legislation on the space industry (Okladnaya & Korchevska, 2021). International space law is a branch of public international law. The norms of the treaty and customary law are the basis for the behavior of international law subjects engaged in space activities. There are five multilateral space treaties, which are supplemented by important recommendations of international organizations, such as United Nations (UN) General Assembly Resolutions and International Telecommunication Union (ITU) Rules (Mejía-Kaiser, 2020).

Space law in Ukraine is regulated by international legal documents and domestic normative legal acts (Figure 1).

Figure 1

International Legal Documents and Domestic Normative Legal Acts of Space Law

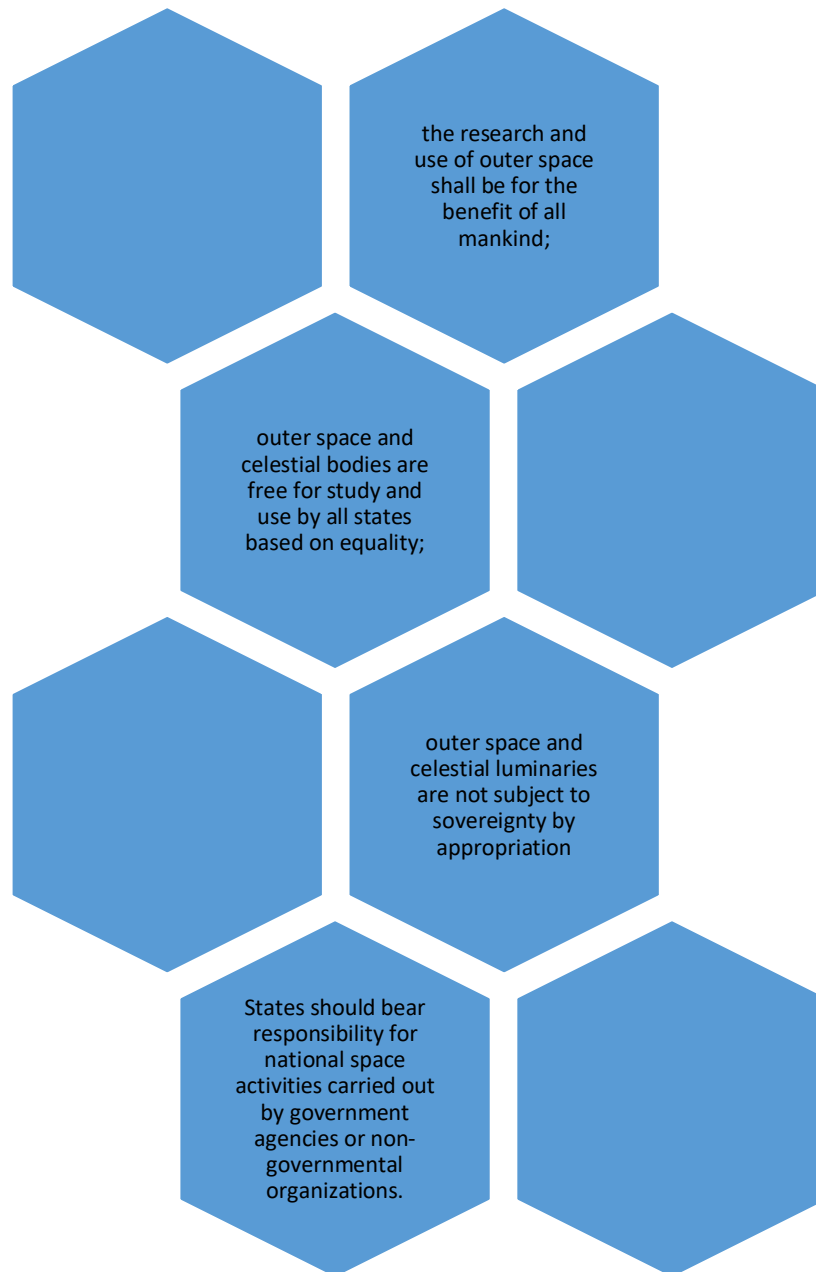


Source: Created by the authors.

Following the provisions of the statutory instrument, States shall be guided by relevant principles during the exploring and using outer space. It is advisable to mention the most important of them (Figure 2):

Figure 2

The Most Important of the Declaration of Legal Principles Governing the Activities of States in the Exploration and Uses of Outer Space



Source: Kostenko (2020).

Modern scholars distinguish the following sources: international space law, soft law instruments, technical standards, contracts, and private agreements. However, in Ukraine, the following classification of legislation is more commonly used. It should be noted that the state should be responsible for the objects and property of objects placed in space, and their parts are not affected by their passage through space or return them to the Earth (Declaration of Legal Principles, 1963).

Article 92 of the Constitution of Ukraine (1996) declares that only the laws of Ukraine determine the basis of space exploration. The main law of Ukraine that defines the general legal framework for space activities in Ukraine and under Ukrainian jurisdiction outside of Ukraine is the Law on Space Activities (1997). The rules of Ukraine's space activities include standards for the serviceability of space objects, regulatory acts that govern the procedure for granting permits to perform certain space

activities and the control over the performance of such activities; certification and registration of space objects; the organization, conduct, and support of space launches and flights; supervision and control over the safety of space launches and flights and their operation. The rules of space activities also include other normative legal acts regulating activities in the space industry and its safety, as well as compliance with intellectual property rights protection, state, military and commercial secrets (On space activities, 1997).

With the beginning of space exploration in the XX century, Ukraine actively participated in the development of outer space. With independence, the state could not overcome the system economic crisis, which led to stagnation of the space industry, slowed the development of space law, the practical application of which is not active enough because in most cases it is exclusively used in international cooperation with more developed countries of the space industry and the launch of a few. unmanned space objects. There are the following factors that create obstacles to the successful development of the space industry and on. Only after the resolution of these problems will the successful development of the space industry and the further development of space law be possible (Okladnaya & Korchevska, 2021). According to these problems, there is a need to improve the legislation in the field of space activities, the development of further amendments to the legal acts of space law, the legal status of scientists of this industry, attracting foreign investment, and stimulating domestic investment.

A significant part of Ukraine's space legislation is a state secret. And accordingly, the main subject of space law is the state. Ukrainian spacecraft manufacturers began to implement the basic rules of international space law after their ratification at the state level, while domestic space law was virtually non-existent. All legal rules for the design, production, operation, and launch of space vehicles were implemented based on secret bylaws and administrative regulations (Loshytskyi & Koroied, 2019).

For a long time, private international space laws were a theoretical abstraction of Ukrainian international law for Ukraine. For example, the current domestic space legislation still does not allow private structures in the space industry. Accordingly, no legal relationship could arise between the national space industry of Ukraine and private space enterprises (Loshytskyi & Koroied, 2019). However, the world has long gone further on this issue. A significant portion of the world's flying space devices are owned by businesses. Legal issues in the future will usually be inevitable and will require obligatory transparent mechanisms for the implementation of legal relations, as soon people will spend more time not only on Earth but also in space. This was evidenced by active scientific research and already created unique space developments under the leadership of Elon Musk, who controls about 25% of the world's satellites and other leading countries of the world (UK, India, China, USA, United Arab Emirates, France, Japan) (Lykhova & Bilenchuk, 2021).

Speaking about the interference of business and private companies in space activities, such as Space X, it should be noted that the world requires to adjust the legislation and international regulations to these facts. Commercial entities, including SpaceX and Blue Origin, are involved in deep space exploration. Blue Origin's vision is "a future where millions of people live and work in space" and includes plans to send people to the moon (Dapremont, 2021). Despite the scientific goals that have been the main driving force behind space exploration so far, the involvement of private companies may add a new motivation: the desire for profit.

Ukraine's space law must attract a system of international public and private laws and relevant public and private national laws. Therefore, the successful development of the space industry requires the legal and organizational neutralization of the destructive influence of the State Space Agency of Ukraine in this sector (Loshytskyi & Koroied, 2019).

European space policy evolved at two different speeds. First, new players with political legitimacy were able to bring a new dimension of political coherence and institutional investment into the space sector. This is a key reason for the strengthened ties between the EU (European Union) and ESA

(European Space Agency). Second, space is a strategic asset and must be part of the EU's toolbox if Europe is to play a more important role in the world through its multidimensional and multidimensional foreign policy (Borotkanych, 2020).

The future development of Ukrainian space law lies in the application of European norms and the improvement of norms on the participation of private entities in the space industry. Ukraine, aimed at joining the European Union, actively cooperates with European organizations and countries in the sphere of space law.

But space will really become a strategic asset when the EU clearly defines its political role. It has been proven that two specific sectoral policies will be necessary in light of today's challenges facing Europe: a space security policy and a space industry policy. Fulfilling these requirements, including moving toward a more strategic and unified European approach, will be essential to maintaining a level playing field and coherent competition; safe and sustainable access to space; and sharing it with Europe as a key actor and partner in space (Liakopoulos, 2019)

In 2016, the European Commission adopted a Space Strategy Notice for Europe, noting that space is an increasingly complex environment, and recognizing the proliferation of space debris as the most serious risk to the permanence of space activities. The strategy, therefore, calls for the protection and sustainability of critical European space infrastructure (Palmroth et al., 2021).

In addition to threats to aircraft in flight and people and property on the Earth's surface, space debris in orbit is growing menacingly and poses a threat to manned space missions and unmanned space objects. While the Convention on International Liability for Damage Caused by Space Objects (1972) addresses threats to space objects at launch, in outer space, and during re-entry into Earth's atmosphere, efforts have been made to minimize space debris in orbit, outside the space treaties (Mejía-Kaiser, 2020).

The growing pollution of the orbits around our planet could turn it into an unusable territory to the detriment of all nations. The technological development of exploration and the increasing use of outer space leads to a point where urgent action is needed. Maintaining this commonplace and clearing the dangers is not the responsibility of a few states, it is an effort that requires the cooperation of the entire international community (Mejía-Kaiser, 2020). With the increasing number of rocket launches, the problem of space debris is a growing concern. Each new launch creates more than one debris object, and the spacecraft itself becomes a debris object if it is not desorbed at the end of the mission (Palmroth et al., 2021).

In the absence of detailed and specific regulation in the UN space treaties, the question arises as to what the best way is to further develop the legal (and thus behavioral) framework for space activities, including the issue of space sustainability. The most obvious aspect of space sustainability and related norms of responsible behavior in space that has been discussed and regulated over the past two decades concerns space debris avoidance (Palmroth et al., 2021).

The space age has opened up new horizons for humanity in many areas. From exploring Earth from space to exploring the deepest parts of our universe, many of the benefits of space activities have spread to many countries, even those without their own space technology. However, the use and exploration of space also has its risks. Risks to the public and the environment during launch, during reentry of space objects, or through radioactive or chemical substances on board space objects are only considered in their infancy in space treaties and other international documents (Mejía-Kaiser, 2020). The dangers of outer space and the prevention of space debris proliferation are among the next issues to be addressed in Ukrainian space law. The purity of space, environmental safety are the future directions of space law development in Ukraine. In addition, smaller and junior space countries like

Finland, Sweden, and Denmark recognize the importance of sustainable use of space in their space policy and space strategies (Palmroth et al., 2021).

The next future direction in the development of Ukrainian space law is the work to improve the legislation on Mars exploration. Studies of Mars on the possibility of its settlement are actively continuing, although there is no clear legal regulation of this issue in international agreements in the world. Ideas on the colonization of Mars are developed by private structures with the purpose of making a profit. The new space doctrine, the global law of sustainable space development, was based on the expansion of boundaries after human entry into space, which raised many questions among scientists about the nature of law as a special tool for the social engineering of space activities, which is not only a regulator but also a key mechanism for managing the transition of civilization to a sustainable future under a comprehensive integration of space technology and services in the daily lives of people. A paradigm shift in the human perspective on the possibilities of space exploration is the key factor in establishing this space doctrine through the global scientific revolution (space law) has made this space the province of all humanity. All countries of the world have equal rights to freely explore, explore, and use outer space and its celestial bodies. Space activities in all countries of the world should contribute to their economic development (Soroka, 2020).

The distribution of land and resources on Mars is critical not only for future exploration focused on this Earth-group planet but also for potential precedent (Dapremont, 2021). The various spacerelated industries and experts with different backgrounds must constantly discuss constructively and informally to realize the sustainable use of space in practice (Palmroth et al., 2021).

The next direction of the future development of Ukrainian space law is the issue of orbital sustainability. International legal obligation to achieve and maintain orbital sustainability, i.e., legally enforceable, will remain a science fiction in the near or medium-term future. However, this does not mean that law and policy cannot serve this very purpose through other means and methods. While not completely abolishing the possibility of renewed treaty momentum, legally non-binding instruments and their application and enforcement through national space legislation is the best way to ensure sustainable space activities (Palmroth et al., 2021).

Emphasizing the political considerations underlying sustainable space development, the process lasted ten years and culminated in the adoption of the UN COPUOS Guidelines for the Long-Term Sustainability of Outer Space Activities (United Nations Committee, 2018).

The UN space treaties do not specifically address the concept of sustainability per se, nor do they define the term. Nevertheless, while permanence is not explicitly named as such, it would be inconsistent with the spirit of the UN space treaties to deny that they will not include any prospective environmental concerns at all (Palmroth et al., 2021).

One of the most recent issues to emerge in the international space law community is space cybercrime - new ultra-modern technologies for committing crimes using space technology. In modern conditions, the rapid development of information technology in the world and the need to exchange information through the use of the global information network Internet really creates a favorable climate for both terrestrial and space electronic criminal attacks: illegal access to public and private computer databases; databases of financial institutions (internal banking computer systems) telephone communications; enterprise computer systems; academic and educational institutions; and embezzlement of funds from the bank accounts of others, including those in other nations of the world (Lykhova & Bilenchuk, 2021). The "Malicious Use of Artificial Intelligence: Forecasting, Prevention, Mitigation" report rightly warns that today's wearables and grid technologies of electronic intelligence already allow unhindered penetration into the systems of both land-based institutions and organizations, in particular unmanned cars and unmanned aircraft, , trains, ships. Thus, it allows to actually control them by a special code in order to commit malicious actions, which contributes to the

real possibility of committing not only theft of property, resources, funds but also the possibility of committing both terrestrial and space threats in the form of epidemics, accidents, and disasters (Sopilko & Bezzubov, 2019).

Space cybercrime was committed on the ground territory and outer space of Ukraine, but also on the ground territories and outer space of all seven states of the world (and on different continents) through the use of powerful tools of international satellite communication systems (European mobile satellite communication system EMSAT, global ORATION TECHNOLOGIES, and satellite technology based on the international satellite network GLOBALSTAR) and ground stations of telecommunication in October 2018 (Lykhova & Bilenchuk, 2021).

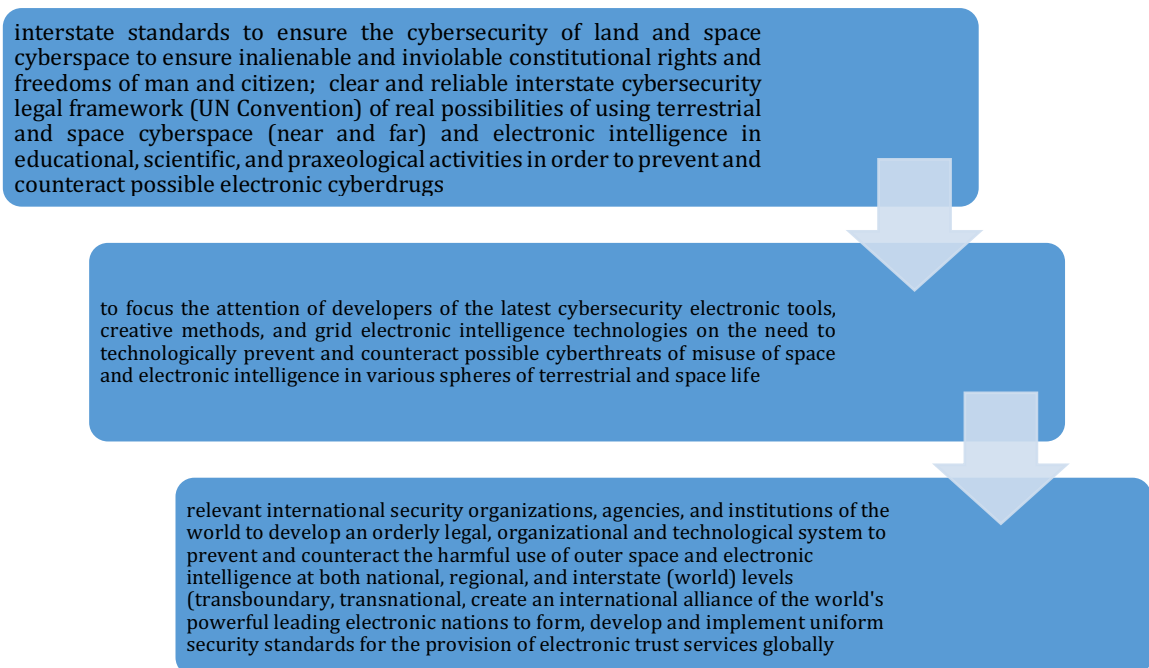
As the development of space law in Ukraine are the following tasks: The first challenge is the need to harmonize the institutional framework for cooperation among key actors in the common policy of space exploration. The second task is the necessity to coordinate the commercial and political aspects of the joint EU space policy. Thus, space initiatives should be financed with public funds. The third task concerns space legislation and regulations for commercial space activities. It is known that a number of the world's leading countries for peace, human security, and international security of civilization have established their own space agencies, institutions, and organizations. For example, the United States of America created space forces in 2019. Japan recently created space forces. Ukraine has long had a Space Observation Center (Lykhova & Bilenchuk, 2021).

By 2030. Europe should be able to take full advantage of its space solutions to implement its policies, enhance European values and security, improve knowledge, and promote prosperity. Every European citizen should take advantage of Europe's space opportunities and benefits. As evidenced by the Joint Statement on the Vision and Goals for the Future of Europe in Space by the European Union and the European Space Agency of October 26, 2016 (European Commission, 2016).

Future directions for the development of space law in Ukraine, within the framework of cooperation with other countries, to actively participate in scientific and legislative developments(Figure 3):

Figure 3

Future Directions for the Development of Space Law in Ukraine



Source: Lykhova and Bilenchuk (2021).

To improve the long-term sustainability of orbital space, more information exchange between the different actors in space is needed. Discussions are needed at the highest level as well as among grassroots actors. In general, sustainable space is not a local or regional problem, but a global one, requiring various interdisciplinary interactions (Palmroth et al., 2021).

The future development of space law in Ukraine lies in close cooperation of such branches as science, IT-sphere, law. Considering the rather rapid development of the IT-sphere in Ukraine, a large number of educational institutions, successful students, the latter are quite a weighty resource in the development of the future space law. Since financing is still insufficient for full-fledged space research, human resource, in this case, can be actively used for development.

Work in this direction is possible by creating departments or divisions in the leading universities of Ukraine for the training of students. In particular, it is proposed to study in detail the discipline of space law, including analysis of international regulations, treaties, and agreements, space cybercrime, space technical disciplines, programming, computer technology, etc. It is expedient to train scientific personnel, teaching staff.

Teaching advanced space technology and law requires the use of the latest methods in the educational process, because the information is specific, novel. Digital leadership is worthy of attention for further study and use and is a relatively new interdisciplinary subfield of research that has emerged from previous studies of e-leadership and related concepts in technology management and administration (Garst et al., 2021).

Currently, there is a lack of research and development infrastructure to facilitate collaborative research approaches over sequential approaches. expand research on approaches that integrate transfer strategies into the research project to deal with the rapidly changing processes of digital education. Given the development of digital media, relatively little attention has been paid to the question of how digital media can be used in practice. This question should not only be answered conceptually but also empirically managed. For example, these results could be used in in-depth studies to explore explanations for the lack of knowledge transfer in some areas of educational research on teaching and learning through digital media, particularly in the space domain (Pellegrini & Vivanet, 2020).

It is useful to pay attention to the use of digital media in informal learning settings and its impact on learning outcomes. The design of digital media tools, such as 3D animation, is becoming increasingly complex. Digital media tools have mostly been used in a portable form. Given the constant technical development in the smartphone sector, it is not known if this trend will continue or if stationary digital media (desktop) will also be used in the future (Lin & Schunn, 2016).

The effectiveness of teacher coaching, which typically involves observing, modeling, supporting, evaluating, and offering focused, personalized feedback on teacher practice, and iteratively over time, has been proven to be associated with increased student learning as well as changes in teacher practice (Dille & Røkenes, 2021)

Discussion

The issue of the development of Ukrainian space law is widely researched among scientists. They agree that Ukraine is a member of international organizations in the sphere of space law, its legislation is adopted in accordance with international agreements. However, there are problems, the solution of which would improve this sphere. In particular, the lack of financing of space law in Ukraine, the outflow of scientific workers, insufficient investment in the space sphere (Okladnaya & Korchevska, 2021). Among the gaps of the legislation also note its secrecy and focus only on state regulation, not allowing the private sector to participate in space activities (Loshytskyi & Koroied, 2019). Scholars tend to argue that legal issues are being updated to take into account the rapid development of space (Lykhova &

Bilenchuk, 2021). The world demands that legislation and international regulations be adjusted to the development of space by private companies (Dapremont, 2021). The necessity of joint use of space by Ukraine and Europe as key factors and partner in space is being investigated (Liakopoulos, 2019).

The problem of space debris regulation is actively discussed among scientists (Palmroth et al., 2021). It is expedient to carry out further scientific research on Ukraine's participation in international agreements, adoption of national acts. Another future direction in the development of Ukrainian space law is the work to improve the legislation on Mars exploration. This issue requires a detailed study and development of its own clear legal position. The scientific literature does not pay enough attention to the issue of legislative support for countering space cybercrime. Since the number of such crimes is constantly increasing, this study examined this problem and outlined this direction as the future in the development of space law in Ukraine.

Basically, the scientists propose to improve the space law of Ukraine taking into account its systematization, introduction of new norms, pre-financing (Borotkanych, 2020). In this study, the authors agree with the above, but pay attention to such an issue as the training of scientific personnel of the space industry comprehensively, based on leading educational institutions, applying new opportunities of digital education, pedagogical coaching. This issue may become widely discussed and studied in the future.

Conclusions and Implications

Ukraine has been actively involved in the development of space law and has ratified several international treaties related to outer space, including the Outer Space Treaty, the Rescue Agreement, and the Liability Convention.

In recent years, Ukraine has taken steps to further develop its national space legislation to align with international standards and promote the peaceful use of outer space. The country has also been working on expanding its space industry and increasing international cooperation in the field of space exploration.

Overall, while Ukraine still faces challenges in developing a comprehensive legal framework for space activities, the country is making progress in this area and is committed to promoting the responsible use of outer space.

Given the constant development of technologies, developments in the space industry in the world, Ukraine, above all, is interested in the development of space. It has significant potential in space exploration. Its scientific personnel have been known since the first human space flights. However, with independence, Ukraine focused on economic and defense issues that are relevant today. It was found that Ukrainian legislation did not allow private actors to take an active part in space activities.

Suggestions for Future Research

The future of Ukrainian space law depends on the development of the entire space industry of the country and lies in its improvement, bringing it into conformity with international norms and cooperation with other sectors such as education, science, IT sphere. The human potential of Ukraine is a large number of trained professionals and should be applied primarily in the development of the space industry. The study showed that Ukrainian space law is regulated by special regulatory acts. However, some issues require resolution and further development. In particular, further study lies in the issue of legislative incentives for researchers and investments in the space industry of Ukraine, the education of future specialists as space law, and the entire space industry.

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