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MODEL OF THE STATE-MANAGEMENT MECHANISM FOR THE DEVELOPMENT OF THE SPACE INDUSTRY

Summary

This article substantiates the importance of the strategic role of the space industry in the development of National economies and the Global economic system. A brief overview of the scientists' coverage of the issues of public administration of the space industry, directions and priorities of the state policy of development of this sphere is given. Distinctive features and characteristics of the space sphere are, outlined, such as the active use of the latest technologies and a long period from their development to practical implementation. The development of the Aerospace Industry as a segment of the Global high-tech market, the dynamics of products produced by the Global Aerospace Industry and trends and existing trends in the development of the industry are analyzed. It is, established that investments in the space industry in the short and long term affect the general state of the economies of countries, develop scientific and technical production potential of states. The dynamics of incomes of the world space industry for the period 2009–2017 is analysed, the directions of development of investment activity in the branch for the maximum contribution of the space industry to the development of the national economy are established. It is determined which sources and to what extent can be, used to maximize the contribution of the space industry to the development of the national economy.

Introduction

The exploration, development and use of ‘Space’ by Mankind became immediately crucial in determining the direction of development of the policies of leading States (Countries) and had a significant impact on International relations. Simutaniously, the issue of the impact of space security on the development of general political processes is insufficiently studied. Interest in the study of space policy in domestic and foreign science manifested itself in the early years of the space age. In particular, it is, noted that the space industry is one of the fastest growing and most important for modern economies due to its ability to create and implement both socio-economic and military-political benefits for countries that effectively develop National space programs.

Therefore, the analysis of research on security issues in outer space and the impact of these issues on International relations shows that the scope of work on this issue is quite limited.

Thus, some authors consider issues in the context of 'National Security', while others explore individual issues of National and Military security in space. The results of economic activity of space industry enterprises of Ukraine are, given in particular, it is, noted that the state and private organizations are interested in finding the most cost-effective solutions for the tasks, the list of which covers a wide range of areas – from space and space to satellite launch.

The Model of the State Administrative mechanism of space industry development is, built and the substantiation of its separate components is given. Namely, it is, underlined that in a number of countries in this sphere the complex state policy is, realized, the basic elements of which are market-oriented approach fixed price. Development of extra-budgetary financing, active involvement of commercial contractors and dissemination of procedures and mechanisms of interaction with companies in new directions.

There is also no work on space exploration, which provides a broad discussion of space programs, without which it is impossible to develop a comprehensive strategy for state development and develop an effective system of national space security.

Given the globalization of both socio-political and economic processes in the world, the high-tech sector of the economic sphere plays a crucial role in the socio-economic development of both the individual country and the world as a whole.

Significant technological and economic growth of enterprises related to space shows that this sector of the economy plays a crucial role in the development of national economies and the world economic system.

Part 1. Space research as one of the indicators of the pace of development of scientific and technical potential and economic condition of the state

The current challenges to society due to the rapid development of technology and the rapidity of processes taking place in aerospace markets, require decisive and consistent steps based on real opportunities and understanding of their own priorities. Building such steps in line with a well-thought-out space strategy is, hampered by difficulties of a fundamental nature, associated with the lack of a clear industrial and innovation policy of the State (Country).

However, delays in implementing change pose a real threat, the rapid collapse of space activities as such and cause new and unexpected problems in the political, social and security spheres.

The assessment of the situation shows that these problems are systemic in nature, and the current model of Ukraine's space activities is in a state of stagnation.

Some initiatives and appointments do not improve the situation, as to overcome these problems requires systematic and co-ordinated measures [1, p. 3]. In order to solve such an urgent problem, we consider it expedient to introduce a modern model of space activities and define it as an integral part of the national development strategy of the country.

It will be appropriate to substantiate the main approaches of State policy in the field of space activities, to determine its directions, goals, objectives and priorities, key competencies of space activities, problems and ways to overcome them.

Additionally, it is necessary to develop regulations that will implement and regulate systemic measures according to a single plan to resolve all pressing problems in this area to bring it to the European level.

Space research is, one of the indicators of the pace of development of scientific and technological potential and economic status. Therefore, funding and improving the management of the space industry makes this area capable of creating strategic technological and economic benefits for national economies, is one of the most important strategic areas of government and the basis of public policy in developed countries.

Public administration of the space industry forms components of the general economy in both the short and long term. The, socio-economic importance of strategic decisions in the aerospace industry is, determined by significant scientific, technological, industrial and military potential and opportunities to influence the dynamics and change vectors economic and political system.

The effectiveness of the management mechanism in the field of development of the space industry of Ukraine is one of the conditions for its innovative development, which requires a balanced state policy and comprehensive support.

Despite the significant achievements of scientists in this field, the issues of improving the efficiency of the state mechanism for managing the development of the space sector of the economic and industrial system of the country need further study.

Many scientists have paid attention to the issues of ‘Public Administration of the Space Industry’, directions and priorities of the state policy of development of this sphere. In particular, the scientific and practical principles of investment policy development in the aerospace sector are analysed in the works of domestic and foreign scientists Gbura Z.V. [2], Koshova S.P. [3], Mosova S.P. [4], Soroki L.V. [7].

As noted, by LV Forty, the space industry is one of the main components of economic and strategic potential in many countries.

The study of military defence in space is one of the driving forces in the development of scientific, technical, military potential and the defining direction of national economies in general.

The global space sector has, of late seen a significant increase in private commercial investment against the background of the rapid development of

commercialization in all sectors of the economy, including the market of new technologies [7, p. 33].

After many years of public investment in this area, which has made it possible to create relevant global markets and lay the foundations of scientific and industrial potential, in recent years there has been the creation and rapid development of private space companies.

In turn, the rapid technological and economic development of space-related industry systems, suggests that the space industry plays a strategic role in accelerating the further sustainable long-term development of national economies and the global economic system as a whole.

Psyuk MO is devoted to the study of trends in the development of the aerospace industry, as part of an effective national system. [5], Koshova S.P. [3] and other researchers.

As, M.O. Psyuk, the space sphere directly or indirectly affects various aspects of social life and economy: information technology and telecommunications, communications and navigation, remote sensing, meteorology, agriculture, ecology, transport, information technology, etc. [5].

For most countries, the space industry, in turn, is an important driver for related industries, as it provides funding for research, development of new composite materials, electronics, technology, information technology. Investments in space have an impact on the economy of both countries in the short and long term, shape the development of scientific and technical potential of states, support the stability of industries related to national security [5].

Certain topical issues in the space industry in Ukraine are given attention in the works of domestic scientists, such as Soroka L.V. [7], Bobrovskaya O.Yu. [1] and others.

However, even given the significant number of scientific developments in this field, at the present stage there are still many unresolved issues in the regulatory framework of public administration as a tool for domestic space industry, these studies lack a systematic study of the concept and approaches to public administration as component of effective management of state bodies.

The aim of the article is to study the model of public administration mechanism for the development of the space industry and identify trends in public administration, as well as the most important areas in the development of management processes in this area.

Part 2. Formation, development and prospects for the development of the space industry

Prospects for the development of ‘The Space Industry is a topical issue at present, as this industry belongs to the important sectors of the High-Tech market.

The development of the Space Industry is a priority in the economy of each country, achievements in this sector provide a leading position in the International market of space technology, as well as add some weight to the

development of outer space. This industry plays a key role in the implementation of International space projects.

The primary source of innovation in today's world is science and technology these promote productivity and economic growth.

In, the recent passed the Space Industry has been the engine of research and advanced technology used in other sectors of human activity. At the same time, the space sector of the Global economy demonstrates dynamic and stable development due to the processes of powerful transfer of space technologies from the military to the public sphere, and the development of a range of commercial services related to the space industry and development. For example, weather forecasting, global broadcasting and communication are impossible today without the satellite industry.

The World is now witnessing shifts in the technological paradigm not only in the Space Industry, but also in related fields. The consequence of this evolution is the functioning of Space tourism, Broadband network coverage and private space companies.

All this contributes to the commercialization of the Space Industry and the rapid growth of the Space Industry, development and sale of space products, technologies and services, in turn giving a powerful impetus to increased industry competition at various levels: Global, Interregional, Interstate and National.

At the present stage, ‘Space Activities’, their research and production base have already become a naturally functioning branch of the ‘Global Economy, subject to universal laws and trends.

Consequently, the Global space market is a major segment of the global high-tech market, which is developing rapidly. One of the key drivers of modern economic progress is innovative technologies in the field of information and communication software, digital systems and communications. These developments originate in various areas of the Space Industry affecting numerous areas of modern life.

In each country, the Space Industry is one of the most competitive and leading in the economy, enveloping a number of high-tech enterprises that represent the country in the world market:

– Space technologies guarantee;

– Technological, Military, Scientific, Political and Economic advantages;

– Enable remote sensing of the Earth;

– Prevent emergencies;

– Increase the efficiency of exploration and extraction of natural resources, Introduce innovative practices in agriculture;

– Provide communication and navigation;

– Environmental protection, environment and climate change monitoring [1, p 213].

Therefore, undoubtedly, continuous research, monitoring and forecasting of the Space Industry is a relevant and important issue to ensure the effective development of this high-tech segment, which in a ‘Globalized Environment’

is able to provide prerequisites for long-term strategic growth and technological leadership.

At present, the development of the world space market has covered almost all regions of the world. The entry into space of new states, the development of new space programs, and as a result of increased competition, stimulate the development of this industry, increasing its commercial potential, developing new technologies and opening new areas of its application.

Today, the global space services market has an estimated value of hundreds of billions of US dollars. Profits bring not only space tourism, but also launch services, information packages, manned flights, various experiments and more. The Space Industry has, therefore become a major commercially attractive component of the Global Economy, employing more than a million people worldwide.

Space and Business have already become an integral part of each other. Participation in space activities determines the prestige of the State (Country) power [1]. The main problem is the need for large investments in this industry. The Space Industry amasses significant costs and requires an exceptionally high level of technological development of the country. This makes it difficult for underdeveloped countries to enter the space goods and services market, while highly developed countries are still exploring ay a rapidly developing rate.

Domestic scientists have played a significant role in the implementation of the Soviet Space Program and today, despite certain challenges, they continue to design and launch satellites, manned spacecraft and orbital stations.

This is, confirmed by the fact that Ukraine is one of the thirteen (13) countries of the respected «Club of Space Powers».

The main issues of space sector development are:

– Formation of state space policy;

– Search for vectors of conservation and development of the space industry;

– Development of the management structure of enterprises in this sector.

At present, the domestic Space Industry has united around twenty four (24) large enterprises (development companies and independent research laboratories), the leading ones being the strategically important enterprise of the Space Industry of the State Enterprise «Design Bureau» Southern «named after MK Yangel» and the State Enterprise VO «Southern Machine-Building Plant named after OM Makarov».

In order to solve the set tasks, The State Space Agency of Ukraine was, granted the status of a central executive body [2].

State regulation of the Space Industry is carried out in accordance with the Law of Ukraine «On Space Activities» and the Law of Ukraine «On State Support of Space Activities», as well as resolutions of the Cabinet of Ministers of Ukraine and decrees of the President of Ukraine [6].

The Law of Ukraine «On Space Activities» [6] defines the terminology and basic concepts of the Space Industry. According to the law, ‘Space Activities’ include:

– Scientific space research;

– Use of outer space;

– Development, production, repair and maintenance of space objects (including their units and components), as well as their testing, operation, provision and management launch and return of spacecraft, their components from outer space to earth.

The Law of Ukraine «On Space Activities» stipulates that space activities are carried out in accordance with the National Targeted Scientific and Technical Program of Ukraine, which is developed and approved by the Verkhovna Rada of Ukraine for a period of five years.

From 1994 to 2017, four space programs were, adopted in Ukraine, unfortunately, due to lack of funding thirty to thirty five percent (30-35%) were not fully implemented [5].

The key direction of the 'Domestic Space Industry' is the modernization and creation of models of rocket and space technology to combine innovative technologies for the creation of rocket and space technology and reduce the budget burden through commercial launch services.

State policy plays an important role in the development of Ukraine's space industry.

The, 'cost-effective', State, measures create the basis for technological progress and the formation of market conditions for space services.

The reasons for significant government influence in the space industry include the following factors:

– Strategic importance of the industry (Space infrastructure of the State, provision of State, social and economic needs, the possibility of industry development and support through internal resources);

– Influence on the geopolitical aspect of the country's presence on the world stage;

– High amount of funding;

– Formation of a base of innovative research and leading research and development;

– Development of international cooperation at the state level;

– Formation of a favourable legal framework and investment climate [2, p. 4].

Recently, the Domestic Space Industry has embarked on a course of International co-operation, joining forces with the European Space Agency and NASA.

Currently, Ukraine co-operates with, thirty, (30) countries, has concluded International agreements with twenty-eight (28) countries and participates in twelve (12) International Space organizations, which is confirmed by the geography of exports.

Due to the growing interest in the useful use of outer space and the formation of a market for space services – the State and private organizations are interested in finding the most cost-effective solutions to the tasks, the list of

which covers a wide range – from space exploration and space before the launch of satellites.

The last few years have raised questions about the prospects for the development of the Space Industry, both nationally and globally.

In addition to the uncertainty of the 'Leading Space Powers' implementation of space strategies and approval of large space projects, a new trend in the Space Industry – it increases the presence of the private sector and entrepreneurship [4, p. 122].

Part 3. The world market for space goods and services as part of the global economy in the light of world technological progress

The realities of the Space Industry are, characterized by dynamic changes in internal and external conditions. The developed countries, to one degree or another, want to occupy a niche in the global Space Industry, as this market is currently developing rapidly.

The volume of the world space market by 2027 will reach an estimated 32.4 billion US dollars. In the last 15 years, private investors have played an increasing role in this market: the share of public investment is only 25% and continues to decline [7].

According to scientists studying global economic trends, the space sector is one of the leading high-tech sectors of the economy, which, given the resource intensity and high potential for impact on related industries, needs special attention to improve public administration [5].

The current state of the world economic system is, characterized by high rates of technology development, constant growth of complexity and the need to improve production processes.

According to SP According to Koshov, the space sector is one of the most dynamically developing and is crucial for the modern economy due to its ability to realize both socio-economic and military-political benefits for countries that effectively develop national space programs [3].

The space industry has its own distinctive characteristics, such as the use of new technologies and a long period from the beginning of their application to active practical implementation.

This requires constant significant investment in this area. Technologies used in the space industry require large markets for manufactured products. Historically, this area has focused on the military and defence sectors [3].

The world market for space goods and services is part of the global economy and, accordingly, is, influenced by the processes of internationalization of space activities, while influencing the regionalization and globalization of the world economy [5].

Analysis of the state and changes in space activities as a segment of the global high-tech market allows us to draw conclusions about the following trends in this industry.

An increasing number of countries are implementing research and implementing special measures related to space. Taking into account their own and the World's, economic and political interests, these countries contribute to the development and maintenance of technologies that meet the needs of the space market and defence complex:

– pooling of resources and cooperation between different countries is, increasingly practiced in the implementation of projects;

– countries with a low level of development of their own industry usually buy and use technologies developed in developed countries;

– the need for effective investment in space research in the practical use of space objectively leads to increased efficiency in the use of civilian and military technologies;

– the principle of «dual use» of civil and commercial spacecraft is becoming increasingly popular;

– from the beginning of space development space projects in all countries are financed from the state budget, and when certain areas of activity reach the required level of profitability, their funding from states and intergovernmental structures is reduced;

– the commercial aspect of activities in this field is becoming, increasingly complex. This includes both space developments and smaller-scale production areas, including a number of projects to develop launch vehicles and universal space platforms, including ground infrastructure, spacecraft control stations;

– increasing the pace of competition between countries and corporations leads to the creation of new market capacities that determine the pace and direction of development of integration processes in space, promote the integration of companies into large international corporations, unions and consortia;

– competition between countries in the field of space activities is shifting from the level of commodity competition to the level of national innovation systems and basic and applied scientific fields;

– integration into global economic relations – one of the factors contributing to the intensity of innovation processes in space activities;

– increasing the complexity of space products and services is constantly increasing the requirements for space technology. In combination with competition, these processes provide only expensive innovations, which then spread to other sectors of the economy;

– to increase financial stability and efficiency, large space companies create networks of subsidiaries that produce not only high-tech products but, also develop the latest technologies [4; 7].

The space sector is a product of global technological progress and at the same time the reason for the growth of technical and economic potential of sectoral and systemic sectors of countries that are becoming a full-fledged component of global economic processes.

Over the last decade, the aerospace industry has grown in monetary terms. The volume of global industry turnover in 2017 increased to 383.5 billion dollars. US, which shows an increase in growth compared to 2009 by 166.9 billion dollars. US, which is more than 77% [2].

As of 2018, a total of eightyeight (88) countries had space projects. Fourteen (14) of them have their own launchers.

Eight space agencies have budgets of more than $ 1 billion a year: the United States, Russia, China, India, France, Germany, Japan and Italy.

In 2018, 5 new space agencies appeared with relevant national projects in Greece, Luxembourg, Portugal, Australia and Zimbabwe.

The increase in the number of countries implementing space programs indicates the willingness of governments to invest in space potential and receive relevant strategic and socio-economic benefits [4, p. 25].

In general, in the relatively short period of the space industry's existence, the space products market has largely evolved from a monopoly to perfect competition due to a sharp increase in the number of market participants since the 1990s. The space sector will continue to have significant growth rates in the short and medium term. According to Bank of America Merrill Lynch, the space economy will reach $ 2.7 trillion. USA in 2045 with an increase of more than eight (8) times [6].

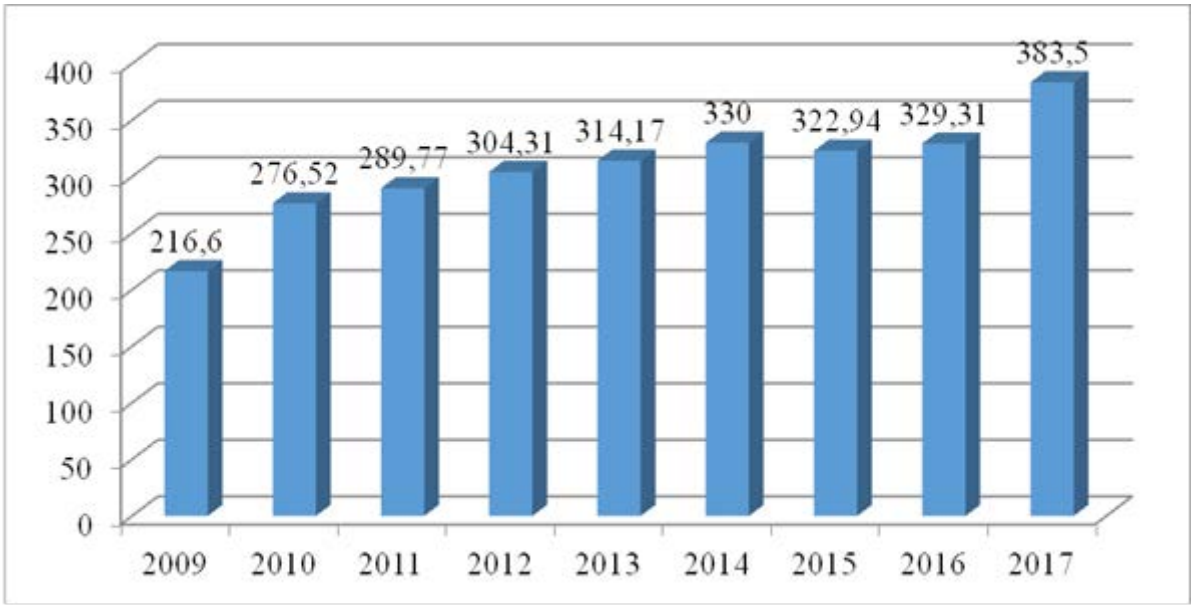

Figure 1. Dynamics of revenues of the global space industry for the period 2009–2017, billions of US dollars

Source: Compiled by the author according to [6]

Improving the efficiency of investment activities in the space industry of Ukraine is, one of the important conditions for its innovative development in the context of globalization.

Solving problems in this area requires comprehensive work in the implementation of specific measures in the scientific field and in high-tech production. As an important economic entity in the world market, an investor and regulator of the industry, Ukraine must do everything possible to promote the realization of the innovative potential of the domestic space rocket complex.

Domestic companies in the space industry both manufacture their own types of equipment and work to create launch vehicles from around the world. Since 2013, there has been some decline in the industry, as shown by Figure 2, which shows statistics of Ukrainian production in this area in 2010–2020.

A positive trend is that during the years of independence with the participation of domestic space industry was launched orbit 154 launch vehicles. The downside is the lack of funding for the space industry.

Thus, in 2020, according to the State Space Agency of Ukraine, there was a decline in production and sales caused by the spread of the COVID-19 pandemic, lack of demand for rocket engines, shifting the production of special communications and termination of supply agreements [6]. The results of the space industry of Ukraine for 2013–2020 are, shown in Figure 2.

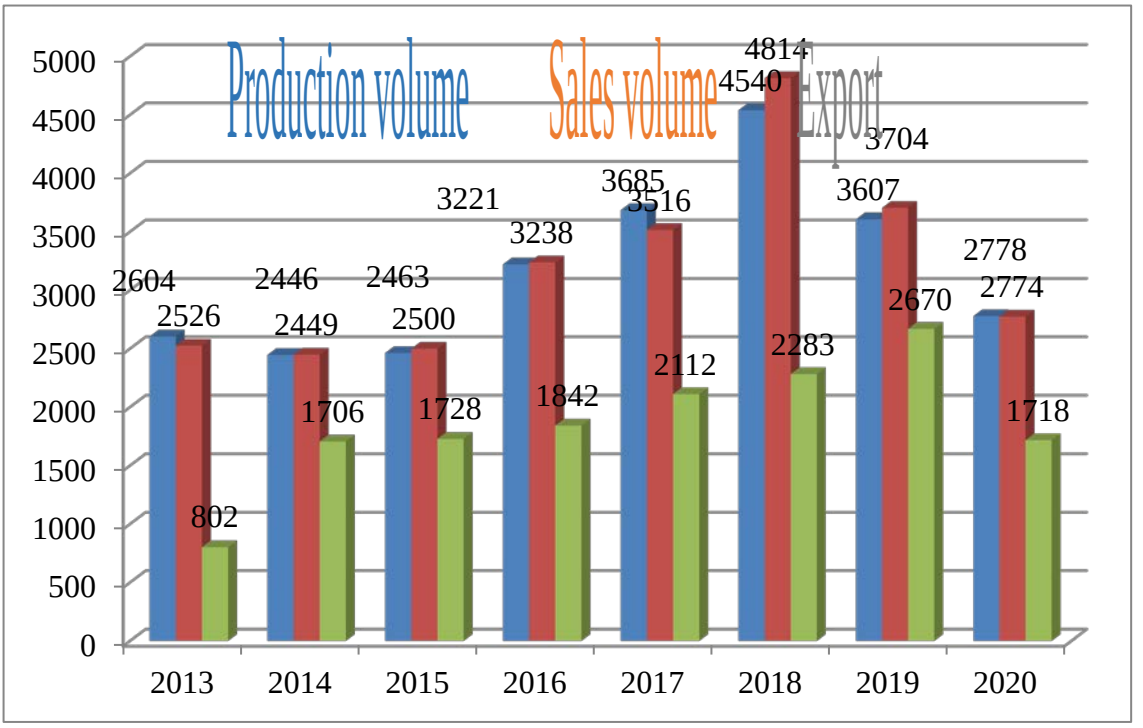

Figure 2. Results of economic activity of enterprises of the space industry of Ukraine for 2013–2020, UAH million

Source: [6]

Part 4. The role of investments in the development of the space industry and their impact on modernization in the aerospace industry

Given the interest in space and the market for space services, the state and private organizations are interested in the most cost-effective solutions, the list of which covers a wide range of areas from, space exploration and space objects to the launch of satellites.

Over the last decade, the commercial space sector has become a developed area that contributes to the growth of the global space market. The potential of the market laid the foundation for a new level of cooperation with other countries working in this field and significantly affecting the institutional sphere of space activities [1].

Given the significant development of public-private partnership, the commercialization of technology is, considered the most important tools for implementing national space policy and strengthening the capacity of the industry.

A number of countries in this area are implementing a comprehensive government policy on a market approach to public procurement (tenders, fixed-price contracts, private financing), active co-operation with commercial contractors and the dissemination of procedures and mechanisms for cooperation with companies in these areas. These measures, in turn, stimulate the inflow of investment and accelerate the pace of technological development of the industry (Figure 3).

Socio-economic consequences of investments in space are, related to the peculiarities of the functioning of this industry and the scientific, technological and military consequences of the implementation of space programs. Investments in space provide significant socio-economic benefits, such as increased industrial activity, increased efficiency in certain areas and increased productivity in related industries (eg meteorology, medicine, agriculture).

The topical and timely issue in Ukraine is to ensure the sustainable development of the Space Industry, which is an important strategic sector for national security and occupies a key place in the economy of each country.

The achievements in ‘Space Activities’ contribute to ensuring the leading positions of the state in the International Space Technology Market and in the development of outer space.

Leading space technology is a guarantor of technological, military, scientific, political and economic benefits, as well as a means of communication and navigation, environmental protection and climate change monitoring.

Space technology undoubtedly ensures and increases the efficiency of State intelligence. Therefore, investment in the development of the domestic space sector is extremely important and relevant, as this high-tech segment is able to provide prerequisites for long-term strategic growth and technological leadership, especially in the post-war period.

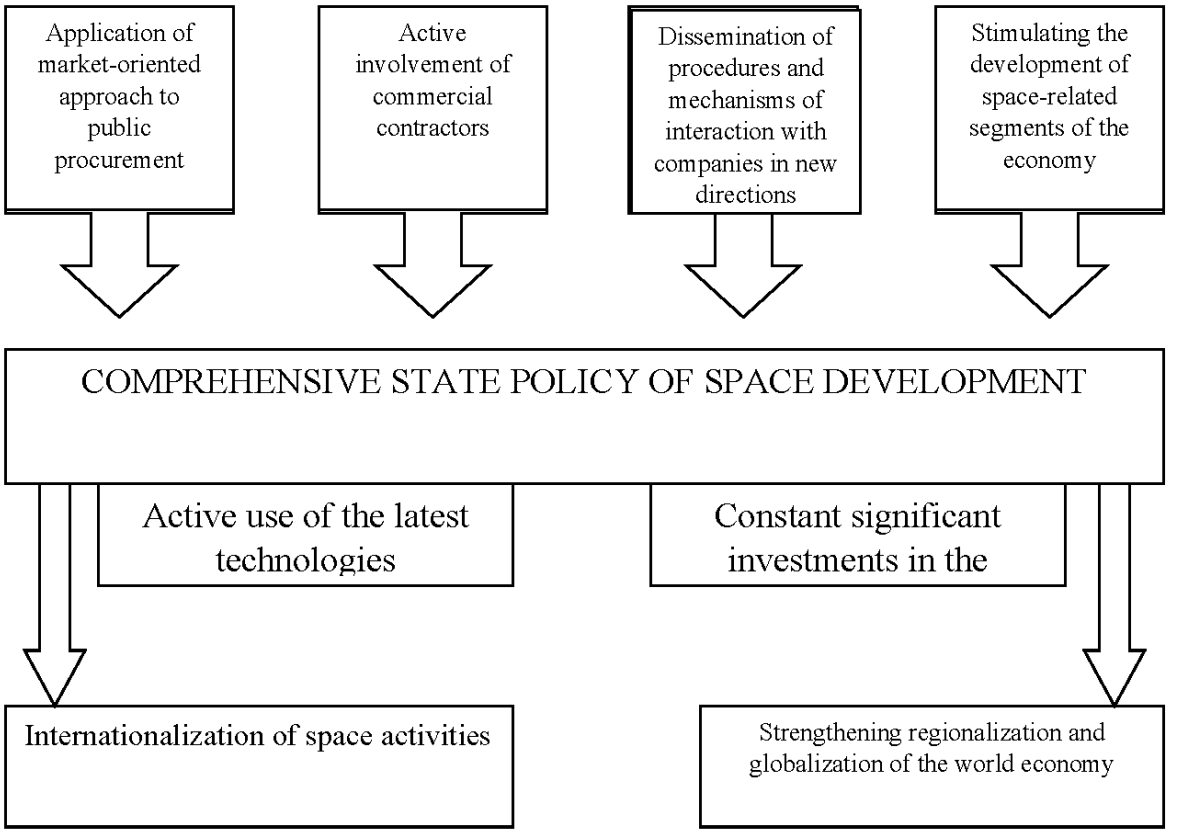

Figure 3. Model of state-administrative mechanism of space industry development

Source: compiled by the author

At the beginning of the twenty first century, the countries of the «Great Space Club» approved new space programs that reflect the main trends in the study and use of outer space in the «Second Space Race».

Despite, the noticeable similarity of the main directions of space programs of this group of countries, the expansion of International co-operation in space exploration, development and creation of new generation spacecraft and technology.

Research of, the Universe, in particular realization of flight programs and research of the Moon and other planets of solar system, stimulating new developments and space research. The desire to take leading positions and turn them into political leadership – there are a number of differences that reflect the level of space development of countries, as well as their national interests [5].

The general space program is, aimed at further development of space technology that meets world standards, basic scientific research, as well as ensuring the country's space security both by solving problems within the space program and by conducting relevant foreign policy activities.

With the entry of Mankind in the twenty first century, a new stage in the study and use of outer space is, characterized by two conflicting trends.

One of the trends is, related to disintegration processes, based on the desire of some countries to address issues of their own space security in opposition to the Global, especially in the use of outer space for military purposes.

This, as well as the desire for dominance in space to take a leading position on the world stage, led to the emergence and development of the «Second Space Race», which has different characteristics than the first.

Thus, the participants have, changed, their number, as well as directions, nature and levels of their interaction [3].

One of the main directions of the rocket and space industry of Ukraine is the modernization of existing and development of new models of rocket and space technology in international cooperation. The implementation of this area provides an opportunity to reduce dependence on traditional partners, combine new technologies of the parties for more productive development of the industry and receive financial support from commercial launches.

Today, Ukraine's space industry cooperates with Two hundred and eight (208) companies and organizations from around the world: in the Americas – with fourtyfour (44), in the European region – with fiftysix (56), in the Asia-Pacific region – with thirtyfour (34), in the Middle East and Africa – with seventyfour (74) companies.

When studying the role of space as a multiplier of economic development, it is important to determine the sources and degree of optimal contribution of the space industry to the development of the national economy. Sources of funding in this area include:

1) budget expenditures on basic research and innovation, which are included in the list of public policy priorities. Refusal of state support for major innovations threatens Ukraine's technological backwardness, shrinking markets in the context of globalization;

2) innovations of companies, holdings, corporations;

3) foreign investment for innovative development;

4) active attraction of loans from banks and other institutions to the space industry (unfortunately, this type of investment in Ukraine has a number of significant limitations compared to foreign practice);

5) innovative investments in high-tech types of production, which include leasing, use of venture capital, various types of intellectual property (patents, license agreements);

6) intensification of investment activities in the space industry through the socialization of companies and the formation of a high-tech sector of the Ukrainian stock market.

Information and qualified personnel are important for optimizing the investment situation in the space industry of Ukraine.

Development of effective access systems for all space entities, especially scientific organizations, to the allocation of investment resources, including improving the quality of the investment climate by optimizing public

administration as a priority, is one of the most important elements of improving investment policy in Ukraine.

Conclusions

One of the most important tools for optimizing the management process in the space industry is government support for investment activities in this sector of the economy. The world space industry is actively commercializing, with a growing share of private capital, which is the cause of new challenges related to competition and the rapid development of technology.

The current development of the «Second Space Race» suggests that this process will continue due to the desire of some countries to take the lead and their unwillingness to uphold International legal restrictions, adoption of which would strengthen both space security of each country and Global security in general.

Also continuing to promote the desire of other countries to increase their space capabilities, including in the military sphere.

In the context of the growing struggle for control of space, the threat of weapons in outer space comes to the fore.

However, International co-operation in space brings scientific and technical, socio-economic and political benefits, as well as affects not only all humanity as a whole, but also each individual.

Without International co-operation in space, it is impossible to implement large-scale space projects, as well as address Global problems and threats to space security.

In addition, the development of International cooperation is attractive to states (Countries) primarily, for political reasons.

In particular, through the formation of ‘A Global Space Agenda’, they have the opportunity to influence the development of space programs in other countries, thus not only achieving their foreign policy goals, but also strengthening their place in the International arena.

International co-operation is a supporting factor for States (Countries) in their quest to take a leading position in space and then in the world.

Therefore, International space co-operation, given its advantages, and in solving space security issues of Global significance, will continue to develop.

For the effective innovative development of the space industry in the context of globalization of the world market, a significant role is to significantly increase investment and increase their efficiency. Addressing this issue requires effective strategic decisions both in terms of optimizing the management of individual enterprises in this area, and in improving the quality of public administration in the space sector.

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