

Секція: Економіка та управління підприємствами

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PRIORITY SCIENTIFIC TRENDS OF RESEARCH IN THE SPACE INDUSTRY

The aerospace sector of the economy has always been attractive to societies, economies and individuals due to its efficiency, profitability and usefulness. It is an active driver of all other sectors of the economy, a leader in innovative developments that become the basis for the development of other enterprises and industries. Identifying promising areas of R&D that will provide key success factors for Ukrainian space enterprises is a strategic task for both the enterprises themselves and the Government of Ukraine.

The issue of the need for astronautics, its optimal structure, purpose, directions of development in Ukraine has been considered and discussed at forums, conferences, government meetings many times. It is worth noting the journalistic and scientific works of Yu. Alekseev, V. Gorbulin, L. Kuchma, O. Kashanov, O. Fedorov, O. Degtyarev, E. Kuznetsov, N. Mitrakhov, O. Pilipenko, A. Shevtsov, A. Shekhovtsov and others. The scheme of choosing the optimal organizational and legal form of organization (enterprise) of the space industry in modern Ukraine, taking into account global trends in aerospace business is presented in the author's work [1].

The space industry operates not only for the needs of one state. Today, as a consumer and producer, it is very closely integrated into the world economic system. Therefore, trends in world science, research and development are reflected in the development trends of the aerospace sector. In this aspect, the UNESCO World Science Report [2] should be highlighted, which highlights the common dilemmas facing countries, namely: finding a balance between local and international participation in research; basic and applied research; generation of new knowledge and production of knowledge that is in demand in the market; between science in the interests of society and science as the driving force of commercial activity. In Ukraine, the influence of global trends has become noticeable, such as geopolitical events (political conflict with Russia and the occupation of part of Ukrainian territories), environmental crises, energy problems, and the availability of an effective development strategy. The EU's Innovation Development Strategy (Europe-20 Strategy) has focused on creating smart, sustainable and inclusive growth that fosters knowledge, innovation, education and the digital society. The development programs of scientific and technological countries around the world have also moved in this direction with varying degrees of success. Thus, the key points in building a strategy for the development of Ukraine's space industry should be the tasks formulated in the UNESCO Report and decisions that include: 1) identifying areas and strategies that have the greatest impact on science and technology, ensure long-term development of society; 2) identification of promising markets for goods and markets for their consumption; 3) identification of risks and different scenarios for the development of scientific and technological development of Ukraine; 4) determination of priority areas of research. The American magazine, which covers business and political news in the space and satellite industry, SpaceNews conducted its research and identified 20 main current areas in 2020, namely: 1) the emergence of suborbital space tourism; 2) several flights to Mars; 3) return of "Hangar 5"; 4) public auction for the C-band in the US; 5) selection of winning companies under the US National Security

Program on space launches; 6) improvement of the program for satellite maintenance and space debris cleaning; 7) «OneWeb» and «SpaceX» begin to deploy a large satellite group; 8) The US National Intelligence Agency engages suppliers of commercial images; 9) «SpaceX» will increase the number of space launches more than twice; 10) in China, the frequency of space launches will remain high; 11) Telesat will select a contractor to form the LEO satellite group; 12) new types of small launch vehicles enter the market; 13) observation of the Earth's surface: the integration of data is becoming a trend; 14) space startups find it harder to raise money; 16) reconfiguration of communication satellites comes first; 17) the Artemis project is making progress; 18) launch of satellites engaged in electronic reconnaissance from space; 19) commercial test manned launches; 20) commercial alternatives to NASA's satellite tracking and retransmission system appear [3].

The main types of modern space activities include: space and applied research; development and production of launch vehicles, development and production of rocket engines; development and production of spacecraft; development and production of ground equipment; launch services and spacecraft management; satellite and television services, satellite internet services and sales of services; satellite navigation services and sales of services; Earth observation services, sale of images and services; space insurance and legal support services, orbital flights and space tourism services; space education and information support services. Management of the space industry of Ukraine is entrusted to the State Space Agency of Ukraine, which is responsible for the development and justification of the National Targeted Scientific and Technical Space Programs of Ukraine. The main directions of the National Targeted Scientific and Technical Space Program of Ukraine for 2013-2018 were: 1) implementation of remote sensing of the Earth from space (in 2018 it was financed by 56.23%); 2) improvement of space telecommunication and navigation systems (100% funded in 2018); 3) conducting space activities in the interests of national security and

defense; 4) conducting scientific space research (funded by 98.97% in 2018); 5) deepening of international cooperation (in 2018 it was financed by 18%). Tasks «Creation of space complexes» and «Ensuring industrial and technological development» at the expense of the state budget in 2018 were not funded.

Among the most important tasks performed in 2019, the Chairman of the State Space Agency of Ukraine singled out the direction "Carrying out space activities in the interests of national security and defense", which was fully funded in the amount of 78500.0 thousand UAH. Tasks were also performed: remote sensing of the Earth from space; improvement of space telecommunication and navigation systems; conducting space activities in the interests of national security and defense; conducting scientific space research; creation of space complexes; deepening international cooperation. "The results of the industry in 2019 were negative for the industry in terms of growth of production and sales - compared to the same period last year, production of marketable products (at comparable prices) decreased by 21.4%, and sales decreased by 24.0%. «Arrears on payments to the budget as of September 30, 2020 is 197.4 million UAH. Compared to 01.01.2020, the debt to the budget (arrears) has increased four times. Depreciation of fixed assets by enterprises of the industry on 30.09.2020 is 93%. For 9 months of 2020, the average number of full-time employees of all enterprises in the industry was 13,896 people (economically active enterprises - 13,864 people). Compared to the corresponding data last year, it decreased by 1646 people (or 10.6%)». Evidence indicates significant problems with the implementation of tasks in the industry as well as problems of management of tangible and intangible components of the industry system. At present, the Space Strategy of Ukraine for the period up to 2022 has been approved, but the National Space Program for the coming years has not been approved. There is a decrease in activity in submitting applications for all industrial property in Ukraine. The number of applications for inventions and industrial designs decreased by 24.5%, for utility models - by 42.9%, for trademarks under the national procedure - by 25.6%, under the international

procedure - by 10.5% (for 9 months 2020 compared to the corresponding period of 2019) [3].

Thus, the analysis of national and international trends in science and technology in the space industry allows us to draw the following conclusions for the formation of a strategy for the development of the space industry in Ukraine: it is worth focusing on research that provides the mass commercial sector; it is necessary to increase financial support for innovation in universities as a basis for reproducing the human resources of knowledge-intensive organizations; a clear mechanism for transforming an innovative idea into an innovative product is needed; the space industry management system needs to be reformed (duplication of functions of the Ministry of Strategic Industries of Ukraine and the State Space Agency of Ukraine); need the corporatization of the industry; requires further investment in tasks related to national security, ecology, production of spacecraft and provision of launch services and communication on a cooperative basis with international counterparties to avoid technological backwardness of scientific, experimental and industrial complex of the industry.

References

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