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THE PROBLEMS OF PUBLIC ADMINISTRATION OF THE AEROSPACE INDUSTRY

Abstract. *The article considers the problems of public administration of the aerospace industry (ASI). Peculiarities of ASI enterprises activity are highlighted. The pyramid of planning of development of ASI is resulted. Determined that today industry requires active government support and improving state regulation, reforming organizational management approaches to address the problems of effective development. Research in the field of public administration in the aerospace industry should be based on the basic concept of ASI development, which includes: public administration of ASI enterprises in order to support the safe and efficient operation of this industry; organization and formation of the management staff. Crisis tendencies have been identified that contribute to the destruction of the industry's potential. It was found out that the main problem of ASI is the problem of structural nature - the mismatch of the scale and structure of the existing aerospace industry in the country, its scientific, technical and production potential to the volume of effective demand for products. The principles of public administration of the aerospace industry of Ukraine (concentration of resources for the creation of competitive products in a limited number of large integrated structures; search and creation of efficient high-tech industries; strict control over financial flows) are highlighted. The problems of public administration of the aerospace industry that need to be addressed are presented.*

Indicated that the most important area of application for state regulation to improve the competitiveness of national ASI and provide spare national first safety is focus on domestic products; In order to implement economic mechanisms of state regulation of competitiveness within the framework of the considered direction at the level of public authorities, it is necessary to develop and implement the Program of import substitution in ASI for the long term. Measures to increase the efficiency of public administration of the aerospace industry are proposed.

Key words: *state, public administration, aerospace industry, financing, technical re-equipment, import substitution.*

Problem statement. Science-intensive and high-tech industries are considered as a basis for innovative development and economic security of the country in today's conditions and are rightly recognized as the driving force of economic development. Profile products of the aerospace industry (ASI) are recognized as knowledge-intensive and high-tech, in this regard is one of the most promising in Ukraine. Interest in the development of the aerospace industry in modern conditions is due primarily to the fact that it is part of the defense industry of the country, which affects the defense of the state and its security.

At the present stage, the development of the aerospace industry is largely determined by the effectiveness of public administration of enterprises in this industry. Domestic ASI companies organize their research and production activities in a dynamically transforming market, intensifying competition for access to resources, which requires conceptual scientific and practical solutions in the field of management of the industry and its structures. Therefore, the implementation of state policy on the development of the aerospace industry is possible under the condition of sustainable development of research and production activities. As a result of strengthening the role of basic science in ensuring the defense capabilities of the state, in particular in the aerospace industry, contributes to solving many problems at the state level . The development of

approaches and tactics for their implementation should be aimed at achieving the objectives and implementing them.

Analysis of recent research or publications. The priorities of the state policy in the field of aerospace management are considered in the rumors V. Gorbulin [2] , O. Degtyarev [3; 4], I. Sazonets [7], A. Shevtsov , V. Shekhovtsov, Y. Yatskiv. In particular, the problems and tasks of organizational and economic support of the space industry are covered in the works of Z. Vakulin [8], A. Voznenko and [1], N. Prosvyryna, A.Tikhonov [6], O.Sazonets [7].

However, despite the availability of publications on this topic, the problem of public administration of the aerospace industry remains poorly understood and relevant today.

The article is the disclosure of problems of public administration of the aerospace industry and the development of directions for their solution.

Presentation of the main research material. The aerospace industry plays a significant role in ensuring the military and economic security of the country. It has a great influence on the level of scientific, economic and military potentials of Ukraine and it is a leading aspect in their development.

In today's world, space is a significant priority in the struggle for world economic supremacy. The success of space strategy in economic, scientific, technological and other aspects will largely determine the prospects for the development of the world economy and the economy of Ukraine.

Aerospace industry of Ukraine is essential for national security and it plays an important role in the innovation of high-tech industries, the formation of economic knowledge, gaining international prestige, achievement and preservation strategic parity and security, effectively solving many scientific, technical and socio-economic problems.

From our point of view, it is necessary to list the main features of this industry. These include:

- information secrecy of the industry;
- the main role of the state in solving various tasks, in particular, the management of the industry;
- development of commercial use of outer space;
- development of international cooperation;
- reduction of budget funding for space projects.

According to A. Voznenko and V. Gorbulin, the peculiarities of the ASI enterprises can be attributed to the following (Fig. 1) :

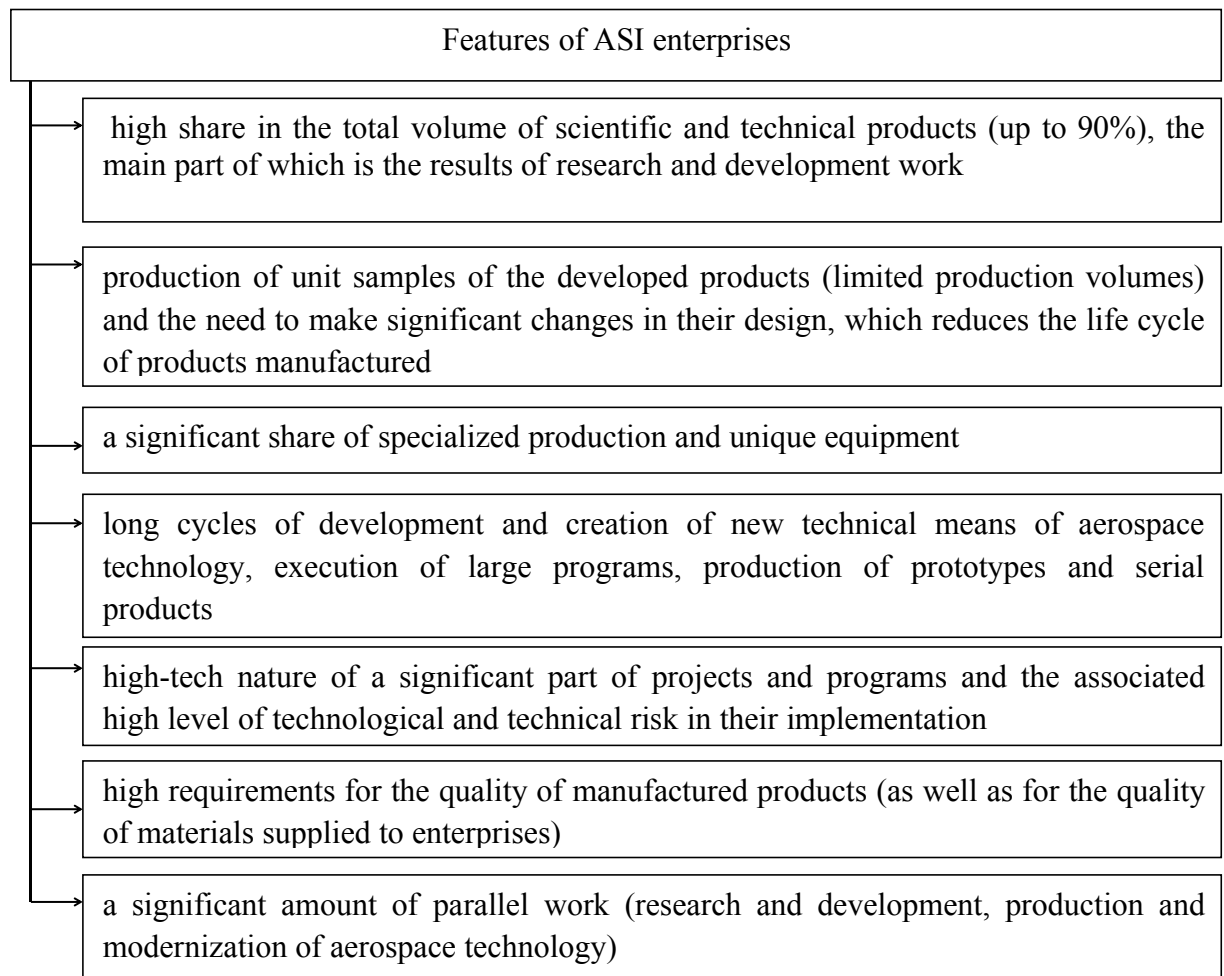


Fig. 1 - Features of the ASI enterprises

Source: compiled by the author on the basis of [1; 2]

ASI enterprises are characterized by the execution of state orders and the production of civilian products (defense and civil production in combination). Development of ASI, a resolution is to strengthen the defensive power, to modernize the economy, to ensure the effective development of science, technology , social services, is a key factor in economic and social development, rising living standards and ensure the entire national security in general. At the

same time, crisis tendencies are developing, which contribute to the destruction of the industry's potential. The main ones are:

- rapid decrease in production, research and development (R&D) due to the reduction of the state defense order (SDO) and its uneven financing, the presence of domestic demand focused mainly on low - tech products;

- intensive and non-renewable outflow from the field of qualified scientific and technical, engineering and labor personnel. The personnel of ASI enterprises is aging . With the decline in production, almost all companies have reduced the number of employees. For a number of reasons (the desire to retain staff, hoping for better times, low efficiency of civilian products, etc.), labor productivity in enterprises remains extremely low;

- violation of economic relations with suppliers from other countries, which performed a significant amount of work on aerospace technology, etc.

In Ukraine, the main problem of ASI is a problem of a structural nature - the mismatch of the scale and structure of the existing aerospace industry in the country , its scientific, technical and production potential to the volume of effective demand for products.

Given the above, it should be noted that the ASI is based on the basic concept. This concept provides:

1. Public administration of ASI enterprises in order to maintain the safe and efficient operation of this industry.

2. Organization and formation of the management staff. In this case, it plays an important role in the development of the industry, as it is one of the high-tech and requires staff training.

Research in the field of public administration in the aerospace industry should be based on the basic concept of ASI development. In accordance with our management in general approaches to strategic management concept of aerospace flows into the pyramid planning (p IP. 2).



Fig. 2 - P iramida planning

Source: compiled by the author on the basis of [5; 6]

The aerospace industry as one of the high-tech has its own specifics. This specificity must be taken into account when developing a basic concept for the development of aerospace activities and its derived fundamental solutions at different levels of the planning pyramid. In particular, the technical tasks for conducting research work must comply with the above-mentioned basic concept and basic solutions.

In addition to the above, it is necessary to take into account the existing problems that need to be addressed promptly:

1. In connection with the development of market relations in Ukraine, the situation in the industry is complicated by the narrow specialization of some of its enterprises and their dependence on government orders for aerospace technology. It should be recognized that in the near future the completely independent

existence of individual enterprises and the industry as a whole without government support and orders is impossible.

2. The economic mechanism for managing the execution of the order fails.

3. The created integrated structures do not fully ensure the fulfillment of the set goals for ASI reform.

4. The current control system of ASI, is actually implemented exclusively with the use of instruments of state regulation, which uses financial leverage and takes into account economic factors, which does not allow the use of mechanisms to attract additional private funding. Almost 100% dependence of ASI on public funding limits the development of the space industry, determines the system of priorities of the state budget process. It is important to note that the current system of distribution of budget funds within the framework of state orders, forms the dependence of enterprises on state resources (ASI receives resources from the state budget), private capital does not participate in the development of this industry, and in this regard, enterprises are slow to find and optimize their own resources, which contributes to some technological lag, increase the cost of production and reduce the level of competitiveness. As a result, there is a need to address existing problems of resource provision, in particular, through the introduction of tools to attract extrabudgetary resources, taking into account the interests of both the industry and the state as a whole.

Therefore, to create the preconditions for the technological development of the industry requires the solution of two main interrelated tasks:

1) to make the levers and mechanisms of public administration more effective, using the well-known method of financial persuasion and economic incentives of economic entities in the production of innovative products;

2) create incentives and necessary mechanisms to attract private investment in the future in potentially market, competitive segments of the industry, as well as for innovative development of enterprises.

To address the issues that have arisen, it is necessary to concentrate all the functions and levers of state management of the aerospace industry of Ukraine, which is in line with the following principles [4] :

- concentration of resources to create competitive products in a limited number of large integrated structures;
- search and creation of effective high-tech productions;
- strict control over financial flows.

Today, a number of priority economic instruments of state regulation of ASI are used in insufficient quantities. The most important direction for the application of mechanisms of state regulation, which increases the competitiveness of the national ASI and ensures national security, is the focus on domestic products. The importance of import substitution policy is difficult to overestimate. Import substitution means the reduction or complete cessation of imports of a particular product through production in the country of the same or similar goods. Today, Ukraine depends on foreign suppliers not only in the production of raw materials, but also in the supply of the latest types of electronic equipment for ASI, which processes high-precision automated equipment, various types of small components, such as switching devices, hydraulic systems, etc. Accordingly, it is in these areas that the intensification of the import substitution process is required, which requires significant financial resources and the development of appropriate instruments of state support and regulation of the entire import substitution process as a whole.

In order to implement the economic mechanisms of state regulation of competitiveness in the framework of this area at the level of public authorities, it is necessary to develop and implement a Program of import substitution in the ASI for the long term.

The development of such a program should include several preliminary stages:

- analysis and evaluation import-substituting production (price and quality, saturation of domestic market) and its impact on the competitiveness of products created on the basis of own developed material along instead of imported;
- introduction of methodological bases for ranking of priority import-substituting technologies taking into account their macroeconomic significance and efficiency;
- creation of import- substituting inter-branch corporate structures, which on a share basis can finance projects of import- substituting productions, which affect the competitiveness of final products and services;
- organization of production of those types of imported components that are used in various types of products, which can create additional competitive advantages of products and services in the field of space activities, ensuring their export;
- directly the organization of state financing of import substitution processes in the ASi, with the subsequent gradual transition to state financing only of those priority projects in which imported components are not used.

Analysis of the scientific literature revealed that the effectiveness of public administration of ASI depends on the technical condition of domestic enterprises [3 ; 7 ; 8] . Therefore, there is a need to immediately address the problem of updating the fleet of technological equipment, the introduction of the latest

information technologies, as well as modern technologies for quality management of manufactured products. To solve this problem, it is important to develop at the state level programs for technical re-equipment of ASI organizations, which aims to create fundamentally new and improve existing methods of optimizing the state management of technical re-equipment of industrial enterprises.

Execution of the specified program should be accompanied by the decision of the following tasks:

- forecasting the required amount of funding for modernization in various segments of aerospace activities;
- carrying out of measures of selection of the organizations of ASI on which it is economically expedient to carry out technical re-equipment, taking into account their innovative potential;
- development of the legislative base of budgetary support of realization of projects of technical re-equipment of the organizations of ASI;
- development, creation and implementation in the ASI of an automated system for evaluating the effectiveness of projects for technical re-equipment of enterprises, which are carried out at the expense of budget funding, which guarantees the achievement of a given level of efficiency of created (modernized) production;
- formation of regional funds to stimulate technical re-equipment of organizations of ASI of Ukraine;
- creation of a model of alternative applications of innovative technologies;
- organization of the state center for training and certification of specialists of the customer organization ASI at all stages of product design and production and modern systems of training and certification of workers, engineers and

managers of the organization needed to ensure sustainable efficient production of high quality products at enterprises included in the technical re-equipment program.

After carrying out measures on technical re-equipment of the selected organizations of ASI on their basis it will be necessary to organize the analysis of existing production and those priority developments which are capable to provide increase of competitiveness of domestic production of ASI in the world market. Having analyzed the existing opinions of experts in the field of aerospace, we can identify a number of promising developments, namely:

- creation on the basis of available domestic and foreign breakthrough technical solutions of aerospace vehicles of domestic production, capable in the next 2-3 years to provide domestic (public and private) consumers and consumers of developing countries with services of higher quality than they use at a lower price;

- complexation of tasks within the framework of separate aerospace vehicles and integrated aerospace groups;

- creation of aerospace vehicles of open modular structure ("LEGO-principle");

- implementation of complex design and technological solutions for the creation of competitive unified aerospace platforms of the new generation of different dimensions;

- creation of highly reliable components and systems of the onboard radio electronic equipment steady against influence of factors of aerospace;

- creation of high-capacity space nuclear power plants and their key elements;

- creation of target devices, sensors, onboard first electronic equipment, power supply systems for spacecraft for various purposes;
- creation of systems and means of life support for long space expeditions.

Also among the main problems of public administration of ASi are the existing schemes of financing and training of professional staff.

As a solution to training issues that meet modern and future requirements for the development of the industry, we can propose the formation of a special personnel policy of the state, which will include: first, active involvement of young people in the development of scientific and technological potential, youth entrepreneurship, innovation and discovery in aviation and astronautics. Secondly, the state should promote object-oriented training and cooperation of industry and aerospace education for the training of personnel reserve of engineering specialists. Third, the idea of creating an information portal to gather information about the available human resources in order to develop cooperation in science and technology of aerospace enterprises and national universities is relevant. Fourth, it is first and foremost important to create "your" professional community in order to communicate, accumulate news and events, share experiences and scientific achievements, combining scientific and technical creativity of youth (STCY) and research work of students (RWS) of aerospace industry. Fifth, the process of establishing a coordination center for training personnel for the domestic aviation industry seems vital and relevant. Sixth, a unique course needs to be created that could be incorporated into aerospace education at any university. In this course it is necessary and relevant to present the issues of marketing conversion products of aerospace enterprises, product quality management, standardization and certification at enterprises united in a single aerospace complex (ASC), training and development, strategies for selecting promising specializations for ASC. It can also include a course on the criteria of safety of the person who manages the ASC facilities and works on these facilities, it is possible to consider maps of

psychological compatibility for the selection of personnel for production of special importance and the facilities whose employees carry responsibility for people's lives in the aerospace industry.

Approximately in such areas, personnel work should be carried out to address the traditional for our economy topical personnel issue, which is an obstacle to improving the aerospace complex of Ukraine, which can and should be an impetus for the development of all domestic engineering in accordance with the principle of multiplication.

The complexity and growing volumes of production require significant financial investment. And, as a rule, no company in the world is able to master such financing on its own. Therefore, the development of ASI requires active state participation in various issues, including funding, the formation of the state order for production, training and others. Also among the features characteristic of ASI, are the long duration of the production cycle and the out-of-order nature of the organization of the production process. The high capital intensity of development, production and after-sales service programs also form special requirements for A financing. The main areas of contribution is ting costs, which manifest difficulty securing funding, awarded under construction technique, which includes the cost of designing, manufacturing machinery research, testing, research.

Given the above, the aerospace industry in modern conditions is one of the most promising and progressive. ASI enterprises need support and implementation of various forms of participation by governments, private investors, participation in international schemes, unions that can finance this industry and offer various options for participation in development.

In general, the aerospace industry, the industry of the future, has high hopes, the realization of which depends on a proper system of public administration.

Conclusions from this study and prospects for further exploration in this direction. Thus, the considered problems of the industry and its development are reflected in the activities of each enterprise, therefore, they must be addressed, paying special attention to the implementation of projects and their evaluation. The need to increase the competitiveness of products and the industry as a whole, to bring domestic industry to new levels makes more careful analysis of international management trends in project management, preserving the identity and achievements of domestic aerospace industry and strengthening it through the best foreign experience.

The application of mechanisms of state regulation of innovative development of the Ukrainian ASI on the basis of tools that ensure their effective implementation will increase the competitiveness of domestic products and services in domestic and foreign markets, which in turn will promote innovative development of the entire high-tech economic sector.

List of references:

1. Voznenko A.A. Evaluation of the effectiveness of state aid to the space industry. *Scientific works of NDFI*. 2019. 1 (86). P. 118-130.
2. Gorbulin V.P. Ukraine's space industry: priority areas of activity in the new conditions. *Strategic priorities*. 2016. 1 (38). P. 5-12.
3. Degtyarev A.V. Current issues of development of rocket and space activities in Ukraine. *Space science and technology*. 2013. T. 19.2 (81). P. 43 - 51.
4. Degtyarev A.V. , Shekhovtsov V.S. The main trends and prospects for the development of world space activities. *Space technology. Missile armament : Sat. scientific Art*. Dnepropetrovsk, 2010. 3. P. 3 - 11 .

5. Lyashenko V.I., Kharazishvili Yu.M. Strategic scenarios of structural development of industrial regions of Ukraine. *Bulletin of Economic Science of Ukraine*. 2016. 2. pp. 113–126.
6. Prosvirina N.V., Tikhonov A.I. Effective personnel management as a factor in increasing the competitiveness of the aerospace industry . *Problems and the future of Russian science and technology* . 2017. p. 471 - 473 .
7. Sazonets I. L. Effect of state policy of high-tech development at the national and military security of Ukraine . *Bulletin Nations tional University of Water Economy and Nature* . 2016. Vip . 1. P. 120 - 126 .
8. Sazonets O., Vakulina Z. Aerospace industries in the system of world and Ukrainian military economy. *Journal of the European Economy* . 2017. Volume 16. 2 (61). P. 169-192.