

Research on the Operation Modes of Scientific and Technological Decision-Making Consulting Think Tanks of Large-scale Enterprises

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Abstract

The development of national defense science and technology is characterized by accelerating innovation and degradation at the same time. The self-reliance of science and technology and the transformation of war forms have put forward new and higher requirements on the national defense decision-making consultation system. There is an urgent need for large-scale enterprises to establish new organization modes and management mechanisms of scientific and technological decision-making consultation. This paper analyzes the operation status of the scientific and technological decision-making consulting organizations of large-scale enterprises, and puts forward problem-oriented optimization measures from the aspects of organization structure, management mechanisms and evaluation incentives, which provide reference for improving the implementation efficiency of scientific and technological decision-making consulting think tanks.

Keywords

Scientific and technological decision-making consultation; Professional groups; Operation mechanisms.

1. Introduction

The Fifth Plenary Session of the Nineteenth Central Committee of the Party emphasized that innovation should play a central role in China's overall modernization, self-reliance and self-improvement in science and technology should be taken as strategic support for national development, and the improvement of systems and mechanisms for scientific and technological innovation should be taken as an important part of persisting in innovation-driven development and comprehensively shaping new advantages in development. It highlights the unprecedented importance the CPC Central Committee with Comrade Xi Jinping at its core attaches to scientific and technological innovation, and the importance and urgency of promoting innovation through reform and development through innovation.

At present, the world is undergoing profound changes unseen in a century. The China's national defense is facing important strategic opportunities. The military's strategic guideline is shifting toward the implementation of combat effectiveness standards and the improvement of actual combat effectiveness. In general, technological innovation is at an important period for breakthroughs in system capabilities. To seize the opportunity of the new scientific and technological revolution, it is urgent to construct a new organization pattern and management mode of scientific and technological innovation [1-2].

The military field is highly antagonistic and competitive. The innovation and application of national defense science and technology is significantly accelerated, the conversion to combat effectiveness is quickened, and the conversion chain is shortened. In terms of planning the development of national defense technology innovation, strategic decision-making and

national defense decision-making should be strengthened. The supporting strength of the consulting system improves the sense and understanding of technologies, and enhances technical reserves. Therefore, the establishment of a new type of national defense scientific and technological decision-making consultation system has a profound impact on the comprehensive deepening of reforms and long-term development of national defense and the military [3].

More than 2,000 years ago, there was a saying in China that "Use Wisdom to Assist Politics"[4]. As the backbone of China's national defense industry, military enterprises are an important part of the decision-making and consulting system of national defense science and technology. Most military enterprises have established internal decision-making and consulting department to provide scientific knowledge, evidence support, and policy suggestions, for the development of enterprises and the defense industry. The self-reliance of science and technology and the transformation of war forms have put forward new and higher requirements for the strategic consulting and technical decision-making work of military enterprises. It is urgent to improve the operating mechanism of scientific and technological decision-making consulting institutions, and coordinate the scientific and technological innovation strengths in various fields to build high-end think tanks and promote the improvement of military enterprises' innovation systematization ability.

2. Operational Status of Scientific and Technological Decision-Making Consulting Agencies in Military Enterprises

Compared with the general consulting system, the consulting work of military enterprises features high confidentiality requirements, close relation between decision-making and consulting, and the main body being experts within the military and the system [3]. The core organizations generally include science and technology committees and professional groups. It is positioned to implement strategic consulting and technical decision-making under the leadership of the enterprise party committee, in order to realize the scientific and technological innovation leadership. It is committed to plan the strategic layout of scientific and technological innovation, improve the scientific level of major decisions, and push breakthroughs in key and core technologies, so as to enhance the capability of independent innovation.

In recent years, relying on its own rich knowledge and expert resources, military enterprises' scientific and technological decision-making consulting agency has played a significant role in major projects, key technology research, academic exchanges and cooperation. It has become indispensable in the technological innovation system of enterprises. However, limited by the management mode "within the system" of military enterprises, there is still a gap between innovative leading role played by decision-making advisory institutions and the development needs of the new situation of deepening reform in national defense and military construction. To some extent, the phenomenon of "academic right" giving way to "executive power" is widespread [5].

On the one hand, consulting activities are formalized and superficial, and an effective consulting feedback mechanism has not been established. The position of consulting reports in the entire decision-making process is not clear. On the other hand, the consulting role played by scientific researchers in the major scientific and technological decision-making process is limited. The decision-making efficiency and implementation efficiency of consulting agencies need to be improved [6].

The following sections will focus on the analysis and research on the promotion measures of the main structure, management mechanism, evaluation and incentive program of the scientific and technological decision-making advisory institutions of military enterprises under the new situation.

3. Expand the Main Body of Science and Technology Decision-Making Consulting Institutions

Modern warfare is a confrontation between system and system. In military system confrontation and struggle, with large amounts of information, ever changing situation, and a great deal of undetermined factors, there are a series of complicated decision-making problems. It is necessary to build a decision-making consulting organization with reasonable and comprehensive knowledge structure, gathering the best talents and high-quality resources. It is characterized by centralized management, clear responsibilities and powers, reasonable division of labor, and flexible coordination, which gives full play to experts that "can lead troops to fight and overcome difficulties".

Construct a flat bottom-up decision-making consultation model of "implementation by professional group, technical decisions by committees, and final approval by the party committee", with the core of enhancing independent innovation capabilities and driving force of industrial development.

On the one hand, it attracts multi-level innovative talents from the company of "chief scientist-chief expert-deputy chief engineer-leader of R&D department-young expert". On the other hand, it introduces experts with practical experience and academic influence from user units, the military, and universities to participate in the enterprise strategy and technical consulting research. The main body of decision-making consulting institutions will expand from a few internal experts to a "small core, large periphery" technology consulting team, with experts of high-level competence and on multiple levels, so as to build a high-end, professional and diversified think tank. The main structure of the consulting agency is shown in Figure 1.

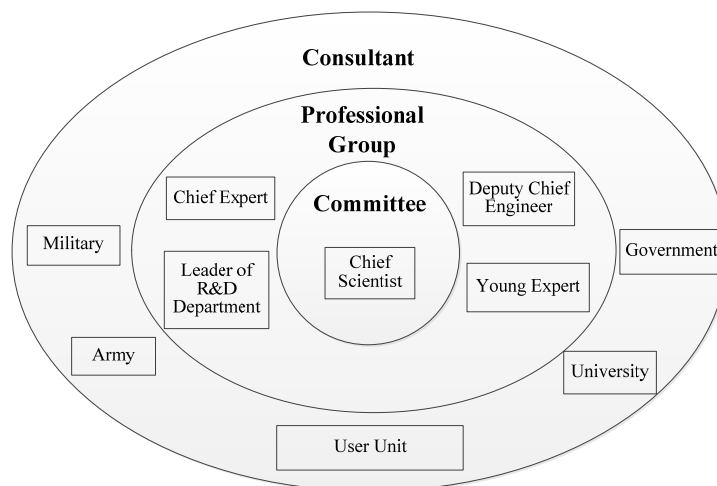


Figure 1. Main structure of the decision-making consulting agency

In view of the confidentiality requirements of military industrial enterprises, members of the committee are composed of chief scientists of the core professional and technical fields of the enterprise. They are mainly responsible for the guidance and review of strategic consulting, scientific and technological planning, scientific and technological evaluation, talent cultivation, and academic communication. Focusing on the hotspots and difficulties in military development, they will research the major issues of the industry development, track and predict the advanced technologies and disruptive technologies, and then make technical decisions of major technological development routes.

At the same time, this model borrows western countries' idea of the "revolving door" mechanism, introducing academicians, high-level experts from the system and the military as

consultants, to be the "External Brain". They regularly exchange international new technology developments, new combat styles and requirements, and jointly discuss future combat concepts and industry developments, so as to provide professional support for major strategic decisions of enterprises.

Talents are the primary resource for the development of scientific and technological decision-making consulting institutions. In addition to high-level committees and consultants, professional groups that carry out project demonstration and technical research in various fields are also needed. These groups will enhance the efficient implementation of scientific and technological decision-making consulting institutions.

In 1960, with the support of Nie Rongzhen, the Fifth Academy of the Ministry of National Defense established a professional group composed of experts. The form of professional group has been kept to this day. The traditional professional group divided the fields mainly based on the responsibilities and business of the enterprise. There are problems such as overlapping of professional and technical directions, irrational allocation of human resources, loose organization and so on. It is difficult to concentrate efforts to output influential results [7].

Therefore, it is necessary to strengthen the top-level design and system layout of the professional team system. Focusing on the needs of warfare, we should incorporate emerging technologies such as big data, artificial intelligence, and unmanned combat, and highlight the tractive effort of the overall system and the supporting of common technologies, so as to establish a professional group system closely related to military development needs and enterprise technology systems. The professional group is mainly responsible for researching domestic and foreign scientific and technological development trends in professional fields, proposing research reports and decision-making suggestions on development issues, and carrying out major project planning and key technical research.

In order to further promote the substantive operation of professional groups, and effectively realize the rational allocation of resources through administrative means, each professional group has a leader unit and a deputy leader unit, based on the research departments in related fields. The chief experts and deputy chief engineers, leaders of R&D department serve as the leader/deputy leader of professional teams. On the one hand, resources can be fully deployed to promote the development of various tasks of the professional team, and on the other hand, it is conducive to the close integration of the professional team and military applications.

Each professional group has 1-2 technical secretaries, who are assumed by young experts in related fields. Under the guidance of the group leader/deputy leader, they will take the lead to carry out relevant research. The work of the professional group contributes to cultivating competitive young talents and stimulating the vitality of young talents.

4. Establish a Goal-Oriented Organization and Management Mechanism

Scientific organization and management mechanism is the most important basic guarantee for the development of science and technology decision-making consulting institutions. In order to enhance the operation and decision-making efficiency and stimulate new ideas, concepts, methods, technologies, and products, we need to set definite objectives for the professional group and implement the whole-process management mechanism such as signing annual assignments, seminars, annual work summaries and evaluations, etc., with a standardized, scientific and normalized system as the guarantee. The organization and management process of decision-making consulting agency is shown in Figure 2.

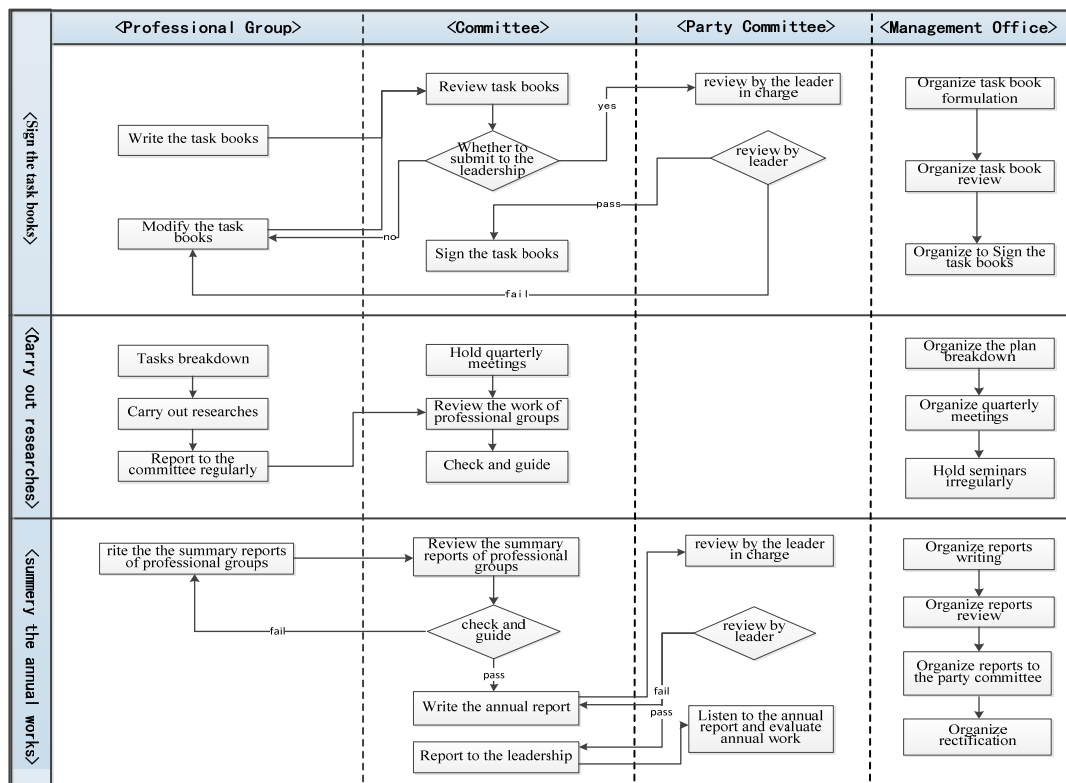


Figure 2. Organizational and management process of decision-making consulting agency

To practice a goal-oriented principle, in the first quarter of each year, the professional group shall set up the annual work objectives and results, according to the development plan of the industry and the enterprise. Then they prepare the task book, and sign the task book after the committee review. The professional team breaks down the plan quarterly and monthly according to the signed task book. The work plan is implemented level by level.

For the specific research work carried out by the professional group, the administration should be simplified and the power should be delegated to lower levels. In the research topic selection and the research process, administrative intervention should be reduced, decision-making and consulting experts should be given greater autonomy, to maintain the independence of thought. At the same time, a management office specifically responsible for the organization and coordination of decision-making consulting work should be set. The office is responsible for signing the task letters, plan decomposition, and summary reports, to ensure the smooth development of various research works of decision-making consulting institutions.

Scientific and technological decision-making consulting activities aim to provide scientific basis, rational constraints and quality assurance for decision-making, and to upgrade personal wisdom into collective wisdom and submit it to the decision-making level in a timely and appropriate manner [8]. This bottom-up management model can draw on the wisdom from all parties, reduce the one-sidedness of decision-making, give full play to the initiative and creativity of grass-roots decision-making consulting agencies, and improve the feasibility and the scientificity of decision-making.

Within the military enterprises, scientific and technological decision-making consultation activities are specific to the professional group level, with key tasks including but not limited to four aspects: development strategy research, development planning and deployment, major project layout, and core technology research.

4.1. Development Strategy Research

According to the overall and leading perspective of development, the professional group shall carry out research on the development trends and directions of the technical field, and put forward basic, strategic and forward-looking development recommendations, policy suggestions and research plans. Focusing on the rapid formation and improvement of combat system capabilities, it should conduct research on the requirements of future war situations and national defense construction, carry out top-level planning and design in various fields, and provide technical and policy support for major strategic decisions of enterprises.

4.2. Development Planning and Deployment

The professional group shall actively participate in the preparation of scientific and technological development plans organized by the military commission and the national institutions, fully analyze the external development environment and technology development trends, and seize the opportunities brought by new technologies, new business forms, new pattern, and new industries. It will systematically plan technological development priorities and development routes, layout major project recommendations related to the main business, and strengthen the leading role of science and technology planning in the layout of technology tasks and resource allocation.

4.3. Major Project Layout

Facing the market and the industry, the professional group shall actively coordinate with the relevant tasks of the military commission and the State. With the input of field technology development planning, external market plans/guidelines, bottlenecks in various fields, and emerging technology development, the group shall lay out a number of disruptive, basic and cutting-edge innovation projects.

4.4. Core Technology Research

Tackling key core technologies often has extremely high technical barriers and strong interdisciplinary synergy. It gives full play to the leading role of the chief scientist of the committee. The professional group is the core to form an innovation consortium to promote in-depth collaboration among various innovation entities at different stages of technological breakthroughs, to solve a batch of "throat seized" key core technologies, and promote the improvement of weaponry capabilities through key breakthroughs and overcoming difficulties.

5. Explore value-oriented evaluation and incentive mechanism

For a long time, restricted by the system and mechanism, military enterprises have a single means of evaluation and incentive, and the innovation vitality of scientific and technological personnel is obviously insufficient, which seriously weakens the innovation strength and the creativity of major achievements. Scientific and technological decision-making consulting institutions are innovative organizations that gather the best talents and resources. It is urgent to explore and establish an evaluation-and-incentive oriented program with academic contributions and innovative values as the core, and create a relaxed and free innovation environment, and fully stimulate the enthusiasm and initiative of researchers and support them bravely innovating "no man's land".

5.1. Evaluation

Achievement evaluation is an important link to ensure the quality of decision-making consultation results. The new evaluation mechanism will abandon the idea of "paper-centric, title-centric, academic qualification-centric, award-centric", and use the professional group mission statement as the standard, and the results as the main measurement standard. The

implementation effect will be reviewed by internal and external peer experts, then the party committee decide the final evaluation. The evaluation points mainly include:

Whether the field development strategy consulting reports are delivered to unit leaders/supervisor unit leaders/user unit leaders/military commission chiefs, etc.

Whether the science and technology development plans are included in the national/military science and technology development plan, and the proportion of project proposals related to the main responsibilities and main business of the enterprise.

Whether the expert takes the lead in planning and implementing major national pre-research projects or model projects.

Whether the expert takes the lead in solving key technical problems of national projects, or promote the transformation and application of technological achievements.

5.2. Incentive

Adhere to special incentives for special talents, and implement incentive measures such as bonus points for innovation, special awards and separate salary list for departments and experts participating in scientific and technological decision-making and consultation, which include:

5.2.1. Bonus Points for Innovation

Incorporate scientific and technological decision-making consulting work into the business performance assessment of the team leader unit and deputy team leader unit, and give bonus points to the annual assessment of the research departments that have taken the lead and participated in the scientific and technological decision-making consulting work.

5.2.2. Special Awards

Based on the value of results, the professional groups that have made major innovation achievements, implemented major innovation projects, or achieved major technological breakthroughs, will be given special rewards of a certain amount to each member according to their contribution.

5.2.3. Separate Salary List

The salary directly affects the enthusiasm of researchers and the quality of their results. It is necessary to adopt market-oriented salary system, all members of the decision-making consulting agency will be paid with separate salary list, without being restricted by the total salary of their departments.

6. Conclusion

General Secretary Xi Jinping proposed that "persist in seeking combat effectiveness from innovation, and strengthen national defense scientific and technological innovation, especially independent and original innovation." National defense science and technology innovation is the primary mission and political task of military industry enterprises. We must seize the development opportunities of the new round of scientific and technological revolution, military revolution and industrial revolution, and promote the in-depth development of innovation system and mechanism reform with decision-making consultation as the core.

This article analyzes the operating status and existing problems of the scientific and technological decision-making consultation institutions of military enterprises. It proposes a bottom-up decision-making consultation model of "specific implementation by professional group, technical decisions by committees, and final approval by the party committee", and expanding the main body of decision-making consultation to develop towards "small core, large periphery". It also establishes a goal-oriented management mechanism and value contribution-oriented evaluation and incentive mechanism. By optimizing and perfecting the operating

mechanism of decision-making consulting agencies, we can give full play to the role of expert groups in technical decision-making and strategic consulting, in order to improve the effectiveness of military industry enterprises' scientific and technological decision-making, and support the self-reliance and self-improvement of national defense.

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