

The Current Situation and Problems of Military-Civilian Integration of Science and Technology Innovation in Shaanxi Enterprises

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Abstract: The paper is divided into two parts. The first part is the initiatives and effectiveness of promoting civil-military integration in Shaanxi Province. The second part is the problems in the development of military-civilian integration in Shaanxi Province: first, the problems in the development of military-civilian integration in science and technology, including the two parts of civilian participation in the military and military-to-civilian conversion; second, the problems in other areas of military-civilian integration in Shaanxi Province, including the problems in the conversion of intellectual property rights in military-civilian integration and the problems in the full play of the democratic parties.

Introduction

The report of the 19th National Congress listed the strategy of civil-military integration development as a national strategy, which clarified the important position of civil-military integration development in the national strategic system in the new era. 2018 "Outline of Civil-Military Integration Development Strategy" and other important documents were released, marking a new historical stage in promoting civil-military integration development. In 2018, General Secretary Xi Jinping stressed during a discussion at the national "two sessions" that the implementation of the civil-military integration development strategy is an inevitable choice for building an integrated national strategic system and capability, and that it is necessary to strengthen strategic leadership, reform and innovation, military-to-military coordination and task implementation. We should speed up the construction of civil-military integration innovation system, increase the transformation and application of advanced scientific and technological achievements, highlight the key areas of synergistic innovation of civil-military science and technology, strengthen the concept of openness and sharing, resolutely break the closed monopoly, and strengthen the optimal allocation of scientific and technological innovation resources. This shows that the party and the state put the strategy of civil-military integration development in a more important position.

Innovation is about destiny, and science and technology lead the future. Civil-military integration innovation is an important reflection of the objective law of science and technology development [1]. Science and technology innovation is the driving force to promote the development of military-civilian integration [2], in the face of the unprecedented changes in the past hundred years, the only way for enterprises to achieve high-quality development is to respect the law, be down-to-earth, overcome the difficulties and climb the peak. Enterprises are afraid to take risks, resulting in slow innovation, insufficient technology accumulation, low competitiveness, and low efficiency of civil-military innovation [3], which gradually forms a vicious circle. In order to fundamentally improve the status quo of "the core technology is controlled by others and the products are in the middle and low end" in China, the endogenous driving force reform should be

implemented for enterprises. Shaanxi is a province of science and education and a western province with development potential. In the context of the complicated international situation, it is extremely important for Shaanxi military and civil integration enterprises to do well in science and technology innovation, especially strategic basic innovation and independent innovation of the core link of the industrial chain.

The revolutionary high precision technology military IP represented by artificial intelligence, gene technology, aerospace, brain science, photonic chips and new materials are at a higher level, and their effective transformation has a catalytic effect of leading other IP innovations. In the context of national security strategy, IP conversion and collaborative innovation are the basis for achieving military, economic and scientific security and building a national innovation system. To promote the transformation of IPR in military-to-civilian and civilian-to-military conversions, not only must the system, policy and organization be planned in an integrated manner, but also the coordination of interests and incentives must be resolved.

1. Shaanxi Province to Promote the Initiatives and Effectiveness of Civil-Military Integration

Shaanxi, as a province of military industry and science and education, has unique advantages in promoting the development of military-civilian integration of science and technology innovation. In recent years, under the high priority and full promotion of the provincial party committee and provincial government, Shaanxi Province has been solidly promoting the deep development of military-civilian integration. The pace of military-civilian science and technology integration has been accelerated, the integration mechanism has been gradually established, the initial pattern of industrial development based on the park has emerged, and the multi-directional interaction of "military to military, military to civilian, and civilian to military" has continued to deepen.

1.1 Shaanxi intellectual Property Rights Civil-Military Integration to Obtain a New Breakthrough

Shaanxi Province has a relatively high concentration of military intellectual property rights. In November 2017, Xi'an introduced 10 measures to prioritize the development of eight core areas of science and technology, including artificial intelligence, aerospace, optoelectronic chips, new materials, new energy, intelligent manufacturing, information technology and biotechnology, which have a large concentration of military intellectual property rights.

In 2018, the Equipment Development Department of the Central Military Commission and the State Intellectual Property Office identified Shaanxi Province as the first batch of pilot provinces for civil-military integration of intellectual property rights to implement the civil-military integration development strategy, and the State Intellectual Property Office and the Equipment Development Department of the Military Commission will establish an evaluation and assessment mechanism to strengthen the work guidance and tracking management of Shaanxi Province and supervise the smooth implementation of all pilot work[4].

1.2 Shaanxi Military Civilian Leading Industry Development of High-End

Shaanxi Province has comprehensively implemented the strategy of military-civilian integration development, strengthened organizational leadership and top-level design, increased reform and innovation, built a military-civilian sharing platform, and strengthened the integration of military and civilian industries, and the province's military-civilian integration work has achieved remarkable results. Shaanxi military industry to the military and civilian products combination structure transformation, to military civilian products and military technology homologation or process similar to the high-end equipment manufacturing and high-tech products, the formation of civil aviation, civil aerospace, equipment manufacturing, electronic information, new materials, new energy and special chemical industry and other military characteristics of the leading industries.

1.3 Shaanxi Science and Technology Innovation and Transformation of Results Achieved

Since the 12th Five-Year Plan, the military units in Shaanxi have undertaken more than 19,500 military and civilian research projects, applied for more than 18,000 patents and obtained 9,300 authorized patents, ranking second in the country in terms of the cumulative number of national defense patents; they have transformed and developed more than 2,000 civilian products and formed an industrial scale [5].

1.4 Shaanxi Military-Civilian Integration Innovation Enterprise Growth Rated

Shaanxi Electronic Information Group and other five leading units operating income of more than 10 billion yuan. Shaanxi Province "Thirteenth Five-Year Plan" the goal of the development of civil-military integration industry is to build 100 civil-military compatible technology support platforms in 2020, to create 10 large groups and companies with 10 billion and 10 large companies with 5 billion civil-military integration, 4 military-civilian integration bases with 50 billion and 6 parks with 20 billion, to cultivate 300 new military-civilian. The total revenue of the civil-military integration industry reaches more than 350 billion yuan [6].

1.5 Shaanxi Province, the Civilian Participation in the Military of the Enterprise Development is Relatively Rapid

Shaanxi province engaged in military research and production of supporting civilian enterprises and institutions supporting products involving land, sea, air and artillery and other military services, supporting units involved in the ten military industry groups. Supporting products level has been upgraded from the primary general supporting products to key components and system-level supporting products, some private enterprises have developed into the overall development of military products contractor.

2. Shaanxi Province, the Problems of the Development of Civil-Military Integration of Civilian Enterprises

2.1 Weak and Time-Consuming Training for Military Qualification Certification of Private Enterprises

Before private enterprises undertake the development and production of military products, they need to apply for qualification certification such as secrecy qualification, national military standard certification and weapon equipment scientific research and production license. Some newly established companies lack relevant experience and professionals in the establishment of qualification system, processing process, notes, etc. They fail to attend special training on military qualification, and do not invite professionals with relevant experience to conduct training and counseling, so that the qualification work takes many detours and takes a long time.

2.2 The Burden of Research and Development of Military Products for Private Enterprises Is Heavy and Risky

Military science and technology products development cycle is long, R & D investment is large, private enterprises want to enter the military field, are to experience new product development, process trial, process finalization, production finalization and other necessary processes. And a lot of R & D preliminary investment by the company itself, generally after 3-5 years to see results, due to the policy level R & D funding support is not enough to help enterprises through the early stage of entering the military field, so there is a certain risk of R & D products.

2.3 Civilian Participation in the Military Enterprises Generally Have the Problem of Financial Constraints

First, the long payback period of military contracts of private enterprises. Due to the production cycle and model guarantee, the payback cycle of military contracts is usually two years, which leads to a high proportion of accounts receivable of private enterprises and takes up a large amount of

liquidity of the company, which has a certain impact on the normal production and operation of the company and usually requires additional bank loans to supplement the liquidity, which increases the financial cost of the company. There are not many existing low-cost financing channels available, and enterprises cannot successfully solve the financing problem, resulting in many private enterprises engaged in military industry cannot operate normally. Second, the capital chain of private military enterprises is tense. Private pure military production enterprises mainly rely on mortgage loans to solve the problem of insufficient research funds. Because the initial investment is too large, the amount obtained by mortgage loan is limited, the cost of loan is higher, and the loan is more difficult. State-owned enterprises can rely on credit loans, while private enterprises credit loans are difficult, basically mortgage loans. Many policies that are beneficial to pure military private enterprises are often unable to be implemented at the grassroots level because of industry barriers or regional barriers, especially tax relief is difficult to put into practice. In 2010, Shaanxi Baoji Special Purpose Vehicle Co., Ltd. won the bid for the troop-carrying assault vehicle project in Beijing, and at the end of 2015, the project completed product design and finalization, but the project was not ordered because of the military institutional reform. The enterprise invested a lot of money without compensation, and the intellectual property rights were not effectively protected. The enterprise in 2014 in the army project of the rotorcraft project of various tests has been near the end, the enterprise invested a lot, but there is no financial security, working capital pressure. As a necessary infrastructure for the rotorcraft development project, there is a lack of financial support for the construction of Taibai Mountain Airport. Only enjoy the land use tax exemption policy in 2014, and no longer enjoy it since 2015, some national tax exemption policies cannot be implemented locally; the complicated and difficult tax refund link for military products. Shaanxi Baoji Caijiapo Shaanxi Weihe tool and mold factory of the project funding amount is large, the national funds need to be matched by the province and city in accordance with 1:1, the local government allocations are often not available on time.

3. Shaanxi Province Military-to-Civilian Enterprises Military-Civilian Integration Development Problems

3.1 Barriers to Mixed Ownership Reform of Military-To-Civilian Enterprises

Some military enterprises in the civilian market to implement contraction strategy, focus more on the main business, and gradually withdraw from part of the civilian market, the enterprise to achieve a lean and healthy body. Private enterprises can cooperate with military enterprises and actively participate in market development. Mixed ownership reform has advantages. However, there are obstacles to the mixed ownership reform of military-to-civilian enterprises, and it is uneconomical for military product manufacturers to carry out intellectual property conversion independently, with high costs and low returns. An important path for military-to-civilian conversion of intellectual property rights is mixed ownership reform, and there are two obstacles to mixed ownership reform: First, the state-owned asset management department is worried about asset loss and over-dead management. Second, the lack of incentive mechanisms, military products production enterprises are not very motivated.

3.2 Institutional Barriers to Military-To-Civilian Conversion

First, the product standards are inconsistent. In the case of drones, for example, the standards for civilian products are higher. Second, there are problems with civil market certification. Third, when the military to civilian, confidentiality requirements are still very strict. Fourth, the price system has not been rationalized. After the military to civilian price is still set by the military, cannot be determined by the enterprise autonomy. Fifth, the intellectual property and technology out of the military procurement catalog, the product is not out of the catalog, so the enterprise cannot arbitrarily military to civilian.

3.3 Talent Siphon Effect is Obvious

Shaanxi Baoji and other military enterprises have a good military production base, but it is difficult to retain talents. Especially under the strong offensive of the new talent policy in first and second-tier cities, many talents are poached.

4. Other Areas of Military-Civilian Integration in Shaanxi Province

4.1 Problems of Intellectual Property Conversion in Military-Civilian Integration in Shaanxi Province

The conversion of intellectual property in military-civilian integration is more difficult, requires long-term investment and accumulation, has a large potential, and involves a low success rate of intellectual property conversion. Shaanxi's military resources have advantages, and the deep integration of intellectual property rights between the military and the civil sector can make a greater contribution to economic development. However, there is a low conversion rate of military intellectual property rights applicable to the development of civilian products, such as poor implementation of military-civilian integration intellectual property rights in Shaanxi, insufficient development of military-to-civilian and civilian-to-military participation, not large industries, and insufficient transformation of military intellectual property advantages into economic development advantages.

4.2 Shaanxi Democratic Parties Play a Full Role in the Existence of Problems

The democratic parties have played an active role in the deep integration of military and civil affairs, but the research found that the role of democratic party members is affected by the secrecy and other elements involved in the integration of military and civil affairs in terms of confidential projects and document circulation. In particular, some democratic party members are in the first line of military-civilian integration development strategy, using their knowledge and talent to serve the enterprise system, there are still some deep-seated problems cannot get more comprehensive information.

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