

Research on the Interactive Relationship between the Development of Strategic Emerging Industries and the Cultivation of Scientific and Technological Talents in Universities

Mingming Wang

Shandong Xiehe University, Jinan 250109, Shandong, China

Abstract: *Some achievements have been made in the research on the cultivation of innovative talents in science and technology at home and abroad, however, aiming at the development background of strategic emerging industries in Shandong Province, the research on the cultivation of scientific and technological talents is insufficient. This study systematically analyzes the interactive relationship between the development of strategic emerging industries and university personnel training from three aspects: the promotion of strategic emerging industries to the development of strategic emerging industries, the promotion of strategic emerging industries to university personnel training, and the mutual restriction between the development of strategic emerging industries and university personnel training, so as to lay a foundation for putting forward countermeasures for training scientific and technological talents in Shandong universities.*

Keywords: *strategic emerging industry development, scientific and technological personnel training countermeasures*

1. Introduction

The systematic research on the training mode of innovative scientific and technological innovation talents abroad mainly focuses on two aspects, First, starting from higher education, it studies and promotes the reform of the training mode of university talents, The guiding ideology of the research and the goal of the reform are to enhance the innovative spirit and practical ability of scientific and technological innovation talents (Polesel,2006; Law&Shum,2009); Secondly, based on the innovation quality orientation, the cultivation of personality, thinking method and practical skills is combined with the training mode of university scientific and technological innovation talents. Harvard University starts from reconstructing the curriculum system, and promotes the integration of students' knowledge structure by setting up core courses and carrying out general education for undergraduate students (Galloway, 2008; Lee&witz, 2009); Colleges and universities in Germany, France and Canada attach great importance to the cultivation of students' engineering practice ability by adopting cooperative education with enterprises (Robert Crocker & AlexnUsher, 2006). Chinese scholars have studied the core literacy and training system of scientific and technological innovation talents, and the evaluation of scientific and technological innovation talents, Zhang Wei et al,(2020) pointed out that the core literacy system of intelligent social engineering scientific and technological innovation talents includes subject literacy, system literacy, computing literacy, information literacy and ethical literacy. It also points out that "two platforms" should be built to realize the deep interaction between theory and practice; Promote "three types of integration" and implement the concept of core literacy training; Improve the "four abilities" and promote the core literacy and other measures; Yang Yuekun et al,(2020) put forward that the establishment of cooperative guarantee mechanism, the strengthening of comprehensive supervision mechanism and the establishment of evaluation appeal system are important guarantees for the implementation of scientific and technological innovation talent evaluation. To sum up, the existing research has laid the foundation for this study, but there are few achievements in the research on the cultivation of scientific and technological innovation talents under the background of strategic emerging industries in Shandong Province,Based on the demand for scientific and technological innovation talents in strategic emerging industries in Shandong Province, this study designs the training path of scientific and technological innovation talents in Shandong Province.

The Notice of the National Development and Reform Commission on Accelerating the Construction of Strategic Emerging Industrial Clusters (F.G.G.J.[2019] No.1473) requires the cultivation of provincial-level strategic emerging industrial clusters to accelerate the growth of new kinetic energy, The Shandong Provincial Development and Reform Commission has studied and formulated the Implementation Plan for the Development Project of Strategic Emerging Industrial Clusters in Shandong Province (2020-2021) to encourage and guide the accelerated development of strategic emerging industries and the cultivation and growth of new kinetic energy. The key to developing strategic emerging industries is to master core technologies, As strategic emerging industries are innovative knowledge-intensive industries, they have strong dependence on scientific and technological innovation talent resources, and have high requirements on the knowledge structure of enterprises' scientific and technological innovation talents, which need systematic and innovative talent training mechanisms to guarantee them, With the rapid development of strategic emerging industries, Training scientific and technological innovation talents has become a key problem that restricts the technological innovation and development of strategic emerging industries in Shandong Province and even in China, Therefore, it is an important topic to analyze the main problems existing in the reserve and management of scientific and technological innovation talents in strategic emerging industries in Shandong Province and explore corresponding solutions.

2. The interactive relationship between the development of strategic emerging industries and personnel training in universities

Analysis of the interactive relationship between industrial transformation and upgrading and personnel training in colleges and universities. This part mainly analyzes the relationship between mutual restriction and coordinated development from the following aspects: talents training in colleges and universities must adapt to the needs of industrial transformation and upgrading, talents training in colleges and universities ensure industrial transformation and upgrading, and industrial structure transformation and upgrading and talents training in colleges and universities restrict each other.

2.1 University personnel training to promote the development of strategic emerging industries

Talent training is one of the basic responsibilities of colleges and universities, Adapting to the needs of regional economic development and strategic emerging industries is the premise and significance of talent training in colleges and universities, so it also plays a supporting and promoting role in the development of strategic emerging industries. In order to implement the central economic development strategy and realize its own sustainable development, the development of strategic emerging industries is mainly driven by knowledge economy and technological progress, which strengthens the importance of technology and capital in its development. To realize industrial transformation and development, high-skilled and high-quality applied talents are essential, and the scientific and technological talents are an important force to support industrial clusters and a key driving force to realize industrial transformation and upgrading.

2.1.1 Talent training in colleges and universities provides human support for the development of strategic emerging industries

The development of strategic emerging industries determines that the demand for high-tech talents is extremely urgent, and whether we can cultivate high-skilled and applied talents suitable for the development of strategic emerging industries determines whether the development of strategic emerging industries can be implemented smoothly.

2.1.2 Talent training in colleges and universities provides technical support for the development of strategic emerging industries

The development of strategic emerging industries is based on technological progress, and whether the technology is advanced is the key factor that determines whether the industrial transformation and upgrading can be realized. Scientific research is one of the basic functions of colleges and universities, and universities at the forefront of discipline research provide technological progress and innovation for the development of strategic emerging industries, especially in the fields of high-tech industries and new formats, and the technical support role of university personnel training for the development of strategic emerging industries is particularly obvious.

2.2 The development of strategic emerging industries to promote the role of personnel training in universities

Colleges and universities promote industrial transformation and upgrading through personnel training. In this process, in order to achieve their own sustainable development, colleges and universities actively adapt to the needs of industrial transformation and upgrading, adjust and optimize the professional layout and development direction, which reflects the promotion of industrial transformation and upgrading to college personnel training.

2.2.1 Promote the optimization of professional layout in colleges and universities

The development of strategic emerging industries poses new challenges to talent training in colleges and universities. In order to train scientific and technological talents more suitable for the development of strategic emerging industries, colleges and universities constantly optimize and adjust the discipline and professional structure, and promote the talents needed by new skills and new industries, such as new energy industry, information technology industry, marine industry and other key industries. The interactive development between the development of strategic emerging industries and universities is helpful for universities to rationally adjust the professional structure layout, add new majors, innovate old majors and expand professional directions according to the needs of the development of strategic emerging industries.

2.2.2 Promote colleges and universities to improve the level of scientific research

The new demand of the development of strategic emerging industries for talents training in colleges and universities also urges colleges and universities to actively participate in the research and development of strategic emerging industries. Colleges and universities actively carry out education and teaching research to improve teaching quality and scientific research ability, and then promote the innovative ability and practical ability of scientific and technological talents. On the other hand, the cooperation between universities and enterprises and enterprises' participation in teaching and research activities in universities can not only expand students' knowledge and improve their application ability, but also effectively guide the adjustment of university research direction, and promote university research to meet the needs of the development of strategic emerging industries. The development of strategic emerging industries plays an important role in promoting the improvement of scientific research level in universities.

2.3 The development of strategic emerging industries and the training of talents in colleges and universities restrict each other

The development of strategic emerging industries and the optimization of industrial structure need the guarantee of higher education. The development of strategic emerging industries needs the support of technological progress and high-quality talents. Cultivating high-tech talents suitable for the development of strategic emerging industries is the key factor to promote the development of strategic emerging industries and social and economic development.

The development of strategic emerging industries is bound to take knowledge as the production factor and act on the production process of industries, and knowledge is transformed into productivity, thus promoting social and economic growth. It also puts forward new challenges and requirements for the training of scientific and technological talents in colleges and universities, and provides opportunities and challenges for deepening reform and optimizing personnel training for colleges and universities that train talents.

To sum up, there is a close relationship between the development of strategic emerging industries and universities, which is mainly reflected in three aspects: personnel training, coordinated development and technological progress.

2.3.1 Personnel training

The rapid, sustained and healthy development of economy mainly depends on the support of talents and technology. In a sense, colleges and universities can not only provide human capital for regional economic development, but also train high-skilled applied talents and provide high-level specialized talents for the development of strategic emerging industries, so as to promote economic development, achieve orderly growth and implement the development of strategic emerging industries.

2.3.2 Synergistic development

The coordinated development of universities and strategic emerging industries mainly means that the training objectives, training modes, teaching contents, teaching methods and research directions of universities should be consistent with the development needs of strategic emerging industries. The goal of talent training in colleges and universities should be set by fully investigating and analyzing the development of strategic emerging industries. The training mode should meet the needs of the development of strategic emerging industries for scientific and technological talents. The teaching content should broaden the professional knowledge and discipline coverage according to the needs of industrial development, and realize the cross development of discipline professional knowledge, so as to cultivate compound skilled talents. The teaching methods should reflect diversity, so as to promote students' comprehensive ability. On the other hand, students should not only master professional basic knowledge and improve the teaching quality of professional basic courses, but also set up interdisciplinary and interdisciplinary elective courses for students to broaden their horizons and expand their knowledge structure.

2.3.3 Technical progress

The interactive relationship between the development of strategic emerging industries and universities is mainly reflected in technological progress. On the one hand, universities promote industrial transformation and upgrading by improving the level of scientific research and promoting the transformation of scientific research achievements, realizing industrialization and application of technology is the fundamental purpose of scientific research achievements transformation, and only technologies with industrialization and application are mature and can realize technology transfer. On the other hand, it is conducive to the coordinated development of production, learning and research. Colleges and universities can give full play to the advantages of talents and scientific research, and actively push scientific research achievements to industrial enterprises. Industrial enterprises can also intervene in scientific research projects of colleges and universities in different periods of scientific research work according to their own needs, so as to promote scientific research achievements to the market efficiently and transform them into productivity.

3. Conclusions

Regional development and industrial transformation and upgrading promote the increasingly close interaction between university development and industrial development. The development of strategic emerging industries in Shandong Province provides new opportunities for the cultivation of scientific and technological talents in Shandong universities. Shandong universities should rely on the strategic emerging industrial structure to optimize the direction of specialty construction. Improve the mechanism of integrating production and education and educating people, and innovate the training mode of scientific and technological innovative talents; Optimize the teaching content and improve the curriculum system of cultivating innovative talents in science and technology; Strengthen the teaching staff and build a teaching team for cultivating innovative talents in science and technology.

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