

Research on the Path to Promote the Deep Integration of Patent Chain and Innovation Chain Industry Chain

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Abstract: With the accelerated evolution of a new round of technological revolution and industrial transformation, the deep integration of patent chain, innovation chain, and industrial chain has become the key to enhancing national competitiveness and promoting high-quality economic development. This article analyzes the connotations and interrelationships of patent chain, innovation chain, and industry chain, explores the necessity, current situation, and challenges of promoting deep integration of the three, and proposes specific integration paths. Research has found that measures such as improving intellectual property policies, strengthening innovation system construction, and optimizing industrial chain layout can effectively promote the deep integration of patent chains and innovation chains, and promote the transformation of China's economy from factor driven to innovation driven.

Keywords: Patent chain, Innovation chain, Industrial chain, Deep integration, High quality development.

1. Introduction

In the context of global economic integration and technological progress, the deep integration of patent chains, innovation chains, and industrial chains has become an important way to enhance a country's overall competitiveness and promote high-quality economic development. The patent chain, as the key to protecting technological exclusivity and building technological barriers, the innovation chain, as the bridge from creativity to commercial production of scientific and technological achievements, and the industrial chain, as the chain of product production, manufacturing, and value exchange, are deeply integrated to promote industrial upgrading, enhance innovation capabilities, and market competitiveness.

2. The Connotations and Interrelationships of Patent Chain, Innovation Chain, And Industrial Chain

2.1. Connotation of Patent Chain

The patent chain refers to a series of interrelated and interacting patents, covering multiple links such as technology research and development, patent application, authorization, implementation, and commercialization. In the industrial chain, the patent chain is manifested as a patent layout around core technologies or products, aimed at protecting technological exclusivity, building technological barriers, and ensuring the competitive advantage of enterprises in the market. The completeness of the patent chain directly affects the technological innovation capability and market competitiveness of enterprises [1].

2.2. Connotation of Innovation Chain

The innovation chain describes the chain like structure of a technological achievement from the generation of creativity to commercial production and sales. It focuses on

technological innovation, covering the entire process from innovation demand to industrialization diffusion, from the lack of technology to industrialization, and from research and development to trial production to mass production for enterprises. Innovation content not only includes technological innovation, but also includes institutional innovation and management innovation; Innovation entities not only include research institutions, but also enterprises or individuals; The innovation scope not only includes major breakthroughs, but also improvements or enhancements.

2.3. Connotation of Industrial Chain

The industrial chain refers to the chain like relationship formed objectively between various industrial sectors based on certain technological and economic connections, and according to specific logical relationships and spatiotemporal layout relationships. It describes a structure of enterprise clusters with certain internal connections, where there are many upstream and downstream relationships and mutual value exchanges in the industrial chain. The upstream links transport products or services to the downstream links, and the downstream links provide feedback information to the upstream links [2].

2.4. The Interrelationship Between Patent Chain, Innovation Chain and Industrial Chain

There is a close intrinsic connection between the patent chain, innovation chain, and industry chain. The patent chain is the technical support and legal protection for the innovation chain and industry chain. The innovation chain is the driving force and fundamental force for industrial upgrading of the patent chain and industry chain, while the industry chain is the carrier and source of market demand for the innovation chain and patent chain. The interdependence, integration, and common upgrading of the three constitute a complete ecosystem for promoting industrial development and technological innovation.

3. The Necessity of Promoting the Deep Integration of Patent Chain and Innovation Chain Industry Chain

In the context of increasingly fierce global economic competition, the improvement of a country's overall competitiveness relies on the enhancement of innovation capability and industrial competitiveness. The deep integration of patent chain, innovation chain and industrial chain can promote the efficient transformation of technological innovation achievements, accelerate industrial upgrading and structural adjustment, and enhance the country's position and discourse power in the global industrial chain.

High quality economic development requires achieving quality, efficiency, and driving force changes. The deep integration of patent chain, innovation chain and industrial chain can promote the efficient allocation of innovation resources and the widespread application of scientific and technological achievements, promote the development of industries towards high-end, intelligent and green directions, and improve the quality and efficiency of economic development [3].

Enterprises are the main body of the innovation chain and industrial chain, and the patent chain is an important means for enterprises to protect core technologies and build technological barriers. The deep integration of patent chain, innovation chain and industrial chain can promote enterprises to strengthen technological innovation and intellectual property protection, enhance their core competitiveness and market position.

4. The Current Situation and Challenges of Promoting the Deep Integration of Patent Chain and Innovation Chain Industry Chain

In recent years, China has made significant progress in promoting the deep integration of patent chain and innovation chain industry chain. The China National Intellectual Property Administration has always taken serving scientific and technological innovation as an important task, providing support from various aspects such as review and authorization, legal protection, achievement transformation, and service guarantee. At the same time, governments and enterprises at all levels have actively taken measures to promote the coordinated development of innovation chains and industrial chains. However, compared with developed countries, there is still a significant gap in the deep integration of patent chain and innovation chain industry chain in China [4].

Low patent quality: Although China ranks among the top in the world in terms of the number of patent applications, the overall quality of patents is not high, especially in terms of the authorization rate of invention patents and the conversion rate of valid patents.

Imperfect innovation system: China's innovation system still faces problems such as fragmentation and scattered resources, and the collaborative cooperation between innovation entities is not close enough, resulting in low efficiency in the transformation of innovation achievements.

Unreasonable industrial chain layout: China's industrial chain layout still faces problems such as low-end and homogenization, and the situation of high-end links and key core technologies being controlled by others has not

fundamentally changed.

Poor environment for intellectual property protection: There are still problems in China's intellectual property protection, such as incomplete laws and regulations, insufficient law enforcement, which lead to frequent infringement and affect the innovation enthusiasm of enterprises [5].

5. Ways to Promote the Deep Integration of Patent Chain and Innovation Chain Industry Chain

5.1. Improve Intellectual Property Policies

Strengthen the quality of patent examination: Improve the accuracy and efficiency of patent examination, strengthen support and protection for high-quality patents, and promote the increase of invention patent authorization rate.

Improve laws and regulations on intellectual property protection: Strengthen intellectual property legislation, improve the relevant legal and regulatory system, increase the crackdown on infringement, and create a favorable environment for intellectual property protection.

Promote patent transformation and application: Establish a mechanism for patent transformation and application, encourage enterprises to strengthen the industrial application of patent technology, and promote the transformation of patent achievements into real productivity.

5.2. Strengthening the Construction of Innovation System

Strengthening collaborative cooperation among innovation entities: promoting collaborative cooperation between research institutions, universities, and enterprises, establishing an innovation system that deeply integrates industry, academia, research, and application, and promoting optimized allocation and sharing of innovation resources.

Cultivate innovative enterprises: Increase support for innovative enterprises, encourage them to strengthen research and development investment and talent team building, and enhance their independent innovation capabilities.

Promote the construction of innovation platforms: Strengthen the construction and management of innovation platforms, promote the aggregation and sharing of innovation resources, and enhance the service capabilities and levels of innovation platforms.

5.3. Optimizing the Layout of The Industrial Chain

Promote the upgrading of the industrial chain: Strengthen the collaborative cooperation between the upstream and downstream of the industrial chain, promote the development of the industrial chain towards high-end, intelligent, and green directions, and enhance the overall competitiveness of the industrial chain.

Cultivate industrial clusters: Strengthen the cultivation and development of industrial clusters, promote the clustering and collaboration of upstream and downstream enterprises in the industrial chain, and form industrial clusters with complementary advantages and coordinated development.

Strengthen international cooperation: Actively participate in the division of labor and cooperation in the international industrial chain, promote the industrial chain to climb to the high-end of the global value chain, and enhance China's

position and voice in the global industrial chain [6].

5.4. Strengthen Talent Cultivation and Introduction

Strengthen talent cultivation: Strengthen the construction of higher education and vocational education systems, cultivate a group of high-quality talents with innovative spirit and practical ability, and provide talent guarantee for the development of patent chain, innovation chain, and industrial chain.

Introduce high-end talents: Increase the introduction of high-end talents, attract outstanding talents from home and abroad to come to China for innovation and entrepreneurship, and provide intellectual support for the development of the patent chain, innovation chain, and industrial chain.

5.5. Creating a Positive Atmosphere for Innovation

Strengthen the construction of innovative culture: promote the formation of an innovative culture that encourages innovation and tolerates failure, and stimulate the innovation vitality and creative potential of the whole society.

Strengthen science popularization work: Strengthen science popularization propaganda and education, improve the scientific and technological literacy and innovation ability of the whole society, and create a good social atmosphere for the development of the patent chain, innovation chain, and industrial chain.

6. Case Studies

Taking the China National Intellectual Property Administration's practice of promoting the deep integration of patent chain and industrial chain, innovation chain, capital chain and talent chain as an example, this paper analyzes the specific path and effect of promoting the deep integration of patent chain and innovation chain and industrial chain. The China National Intellectual Property Administration has always taken serving scientific and technological innovation as an important task, providing support from various aspects such as review and authorization, legal protection, achievement transformation, and service guarantee. The China National Intellectual Property Administration has taken a series of measures to promote the deep integration of the patent chain with the industrial chain, innovation chain, capital chain and talent chain [7].

(1) Promote intellectual property creation: Implement patent quality improvement projects, increase patent examination support for key industries, and support efficient patent acquisition for major scientific research projects. To meet the needs of key core technology patent layout for innovative entities, we provide services such as priority examination, centralized examination, and delayed examination to improve the quality and efficiency of patent layout.

(2) Strengthening intellectual property protection: Continuously strengthen the construction of overseas intellectual property dispute response guidance mechanisms, establish overseas intellectual property dispute response guidance centers and local sub centers nationwide, actively carry out overseas intellectual property risk monitoring and early warning, help enterprises prevent overseas intellectual property risks, and respond to overseas intellectual property disputes.

(3) Deepen patent navigation decision support: Support relevant research institutes to establish intellectual property operation institutions, and organize member enterprises to create a "patent pool" for collective development. Encourage the development of intellectual property pledge financing and insurance business in key areas, effectively broaden the financing channels for innovative entities, and solve financing difficulties.

Through the implementation of the above measures, the China National Intellectual Property Administration has made remarkable achievements in promoting the deep integration of the patent chain with the industrial chain, innovation chain, capital chain and talent chain. The quality of patents continues to improve, the efficiency of transforming innovative achievements has significantly increased, and the layout of the industrial chain has gradually been optimized, providing strong support for high-quality economic development.

7. Conclusion and Prospect

The deep integration of patent chain, innovation chain and industrial chain is an important way to promote the improvement of national competitiveness and high-quality economic development. By improving intellectual property policies, strengthening innovation system construction, optimizing industrial chain layout and other measures, the deep integration between the three can be effectively promoted. This article analyzes the connotations and interrelationships of patent chain, innovation chain, and industry chain, explores the necessity, current situation, and challenges of promoting deep integration of the three, and proposes specific integration paths.

In the future, with the deepening of technological revolution and industrial transformation, the deep integration of patent chain, innovation chain and industrial chain will present a more complex and diverse trend. Further policy guidance and support are needed to promote the optimal allocation and sharing of innovative resources, and to facilitate the efficient transformation and industrial application of innovative achievements. At the same time, it is necessary to strengthen international cooperation and exchanges, draw on advanced international experience and technological achievements, and promote the deep integration of China's patent chain, innovation chain, and industrial chain to constantly reach new heights.

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