



Research Paper

# Comparative Study on the Status Quo of Domestic Patent Technology Transfer

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**Abstract:** Using incoPat patent registration information from 1987 to 2017 as sample data, this paper analyzes the main links of patent technology transfer, technology transfer mode and its laws by using social network analysis and other methods, and analyzes and discusses the status and existing problems of China's patent technology transfer, and puts forward corresponding suggestions.

**Key words:** innovation-driven; Patent licensing; Patented technology; Transfer mode

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## I. INTRODUCTION

With the economic development, people pay more attention to the importance of technology transfer, and countries and regions are paying attention to the discovery of patents, want to achieve the maximum technology transfer; In the process of technology transfer, people found that the key point of technology transfer is the way of technology transfer, on this basis, people began to invest human and material resources to explore the rules and main ways of technology transfer, in order to maximize the development and create newer and greater economic value. After more than 50 years of development, China has also made remarkable achievements in technology transfer. The experience gained in this process is that even though technology transfer is the most important part of production, it is no longer just a simple thinking. In the past, we all had different thinking. The empirical thinking shows that a successful national innovation system has three operating systems: the technological innovation system with enterprises as the main body, the knowledge innovation system with universities and scientific research institutions as the main body, and the mechanism of technology transfer between the two. Based on past experience and present data analysis, this article with the aid of incoPat recorded in the patent registration number analysis, in order to find hidden under the big data technology transfer status, distribution, and contains the problem, and make effective measures for the existing problems, in different ways, to achieve the maximization of technology transfer, In order to make the national economy better development and promotion.

## II. TECHNOLOGY TRANSFER AND PATENT RELATED CONCEPTS

### 2.1 Technology Transfer

Technology Transfer, also known as the transformation of scientific and technological achievements, means that Technology holders Transfer their production Technology, management Technology or sales Technology and related rights to others in various ways.

### 2.2 Patent Concept

"Patent" means exclusive rights and benefits. "Patent" is a translation from the Latin *Litterae patentes*, which means open letter or public document. A patent is usually a document issued on application by a government agency or regional organization representing several countries. In China, patents are divided into invention, utility model and design.

### 2.3 Concept of transfer of patented technology

Patent technology transfer is a part of technology transfer, but the object of patent technology transfer is patent. Patent technology transfer is patent has subordinate can transfer the rights of their own, in order to achieve business value, benefit, in this process you have patents, patent licensing, patent investment, the patent right transfer, patent pledge, auction, the right to apply for a patent assignment and licensing of patents and other

forms .There are three stages in the transfer process of patented technology: acquisition of patented technology, transfer of patented technology, application of patented technology,There is a spiral in the process, with all the gateways to technology transfer and heights that cannot be reached elsewhere.

### III. ANALYZE DATA SOURCES

Patent is one of the important forms of scientific and technological achievements. It represents a clearly defined outcome in the process of scientific and technological research and development, and is granted by legal organs through legal procedures. Patented technology has a great role in many professional has incomparable important role among the more prominent even if the patent literature, patent document has the advantages of larger sample size and strong representative, often plays an important role in many areas, while in the process of storage in the previous literature long hard to save or not convenient to carry, but with the development of technology, The advent of the electronic world has also brought unlimited convenience.

This paper adopts a large number of incOPat data collected publicly, takes patent information from 1987 to 2017 as sample data, analyzes and plots the data, and uses data analysis method to achieve maximum exploration, discover existing laws, and obtain the best research data.

### IV. LAW OF PATENT TECHNOLOGY TRANSFER

#### 4.1 Time Rule

Because the patent is different form, at the different stage, is the law of technology transfer itself with different attitude, nature will have different legal protection, and embodied in the process of transformation of the country or region's ability to accept is the time interval in the application and authorization, this paragraph of time interval and long have short, less a year, many have even 20 years, It is also an indication of a country's ability to acquire technology, if the time interval indicates not only the availability of technology, but also the absorptive capacity of a country.

Incopat collected sample data from 2017 records, patent authorization date in 2017, the filing date of the different is that they are not in the same year, based on data from 1987 to 2017, finishing in the application for a patent for map data chart (see figure 1), and in the process of study to date of application for a patented technology to produce time, The date of patent authorization was taken as the transfer time of patented technology, and the time difference between the two was calculated as the time interval, and then the chart was drawn (see Figure 2).

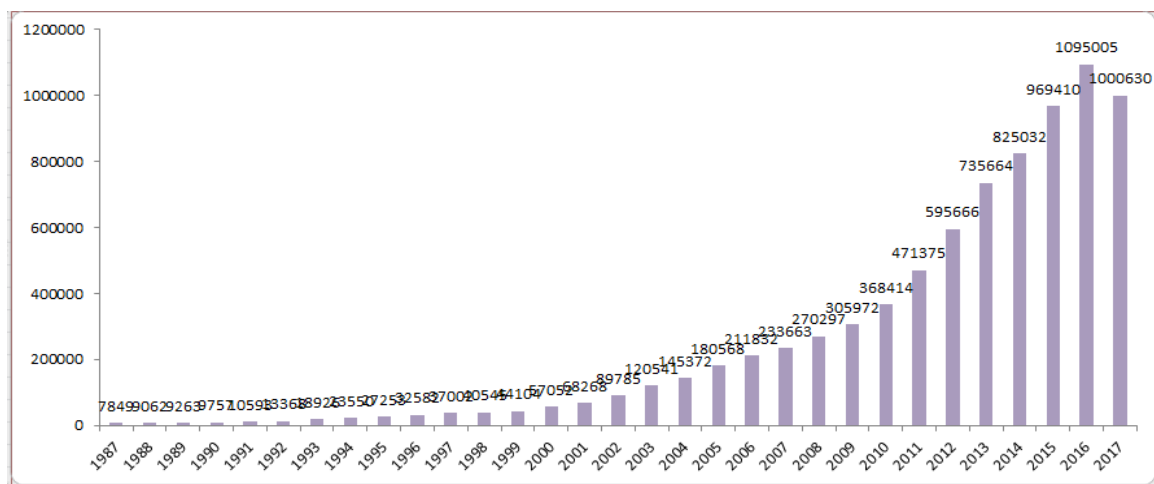


FIG. 1 Distribution of patent applications in Different years in China

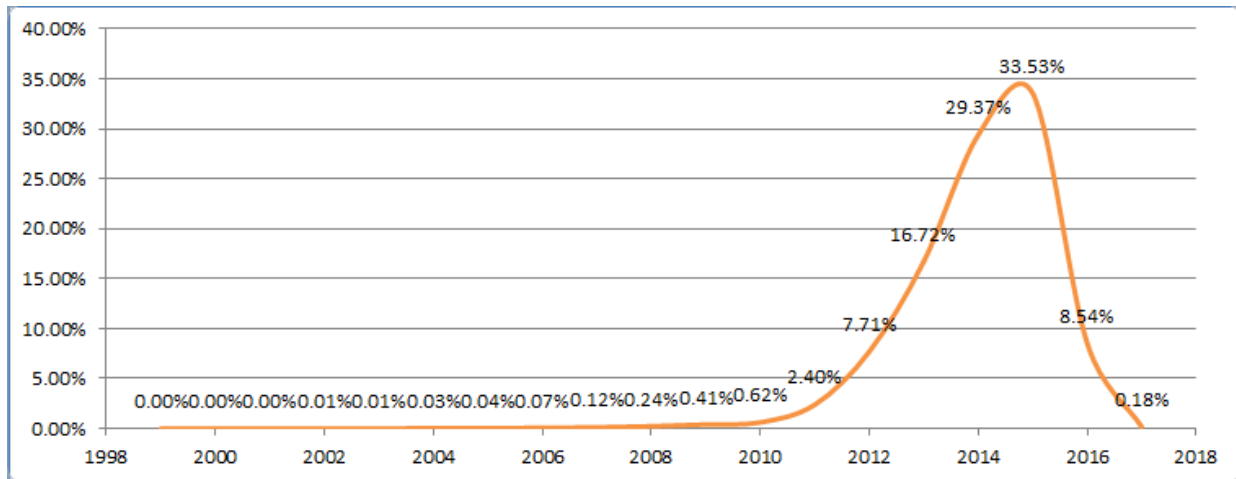


FIG.2 Time interval distribution curve

1) figure 1 illustrates the patent filings in increase year by year, but the number fell back in 2017, but there are still 1000630 patent applications, the attention of the instructions for the national patent, and very encouraging innovation, encourage constantly explore new technology, and the inventor in the country encouraged by increased production technology, improve the areas of technical production ability, Make efforts for better development.

2) It can be seen from Figure 1 that the technology transfer T of each patent is different. According to the sample data shows that patent authorization from application to the time interval of one of the biggest is 18 years, although is too long, but there is also the application can get authorization, but after the summary statistics found that the average at 2.96 years, indicates the patent on the premise of can obtain authorization from application to authorization, an average of 2.96 years experience can be authorized to implement, To some extent, it reflects the poor acceptance of technological innovation in China.

3) Among the 2017 authorized patents registered by incoPat, the application time distribution is from 1999 to 2017. The curve in FIG. 2 shows a concentrated and discrete distribution law. Nearly 80 percent of patents were filed between 2013 and 2015; Nearly 95 percent of the patents were filed between 2012 and 2016. In 2017, only 0.18% of those who applied for the same year were authorized, and the proportion was close to 0 in 1999-2001.

4) The time interval distribution curve reflects that the value of patented technology has a strong real-time property, and the longer the time delay, the value of patented technology will continuously decrease. Found in the figure, with 33.53% of patent application time in 2015, which shows the patent in the application in the second year after a big may obtain authorization, time increases, the decline in value, the possibility of authorized naturally, with decreasing year by year, moreover in more than 12 years after the chance to obtain authorization is near to zero, At this point, the basic won't get authorization, the previous efforts will then be abandoned.

## V. RESEARCH AND ANALYSIS

(1) The scope and intensity of China's patent technology transfer need to be improved. In the process of research, it can be found that technology transfer mostly occurs within regions, and the amount of technology transfer between regions is small, so it illustrates the limitations of patent technology transfer in China. In previous papers, many scholars have proved that geography is related to technology transfer. Due to regional limitations, innovative resources are produced but not spread, which greatly affects the value of innovative resources.

China's patent intensity needs to be improved. In the research process, it is found that patent technology transfer generally occurs in a few fixed regions, and this relationship is fragile and prone to fracture, so the transfer relationship will be terminated. Through this study, we find that we need to consolidate and strengthen the regional technology transfer, and then actively expand the scope of technology transfer, improve the level of technology transfer in China, to increase the dissemination of innovation resources.

(2) The market value of patented technology continues to decrease. By analyzing the time interval from application to authorization in INCOPAT data in 2017, it is found that it generally takes a long time for technology application to authorization in China. Based on the analysis curve of samples, it is found that the probability of obtaining patent license is higher in the second year of patent application, and less than 1% after more than 10 years. The decrease of market value of patented technology is reflected in the curve.

(3) Uneven regional distribution of patented technology. The spatial distribution of patent technology transfer in China is uneven, and the gap between eastern and western regions is obvious. After the study of "patent application quantity", "patent grant quantity" and "technology transfer intensity", it is found that the top 4 are all

located in the eastern region, and the top 10 are also located in the eastern region. It can be seen that the eastern region not only occupies a priority position in technological output, but also has advantages in technology transfer. In addition, the regional technology network map shows the eastern region at the center.

It is found that innovation resources are almost all located in the eastern region, and are also limited in the process of technology transmission in the eastern region. However, in the western region, the technology generation capacity is relatively small, indicating that the innovation resources and innovation capacity of the western region are weak, and technology transfer cannot be carried out in a wide range of regions. In this case, the gap between strong and weak will only be larger. All in all, it is found that the imbalance of technology transfer is caused by inequality in economy, science and technology, education and other aspects. Therefore, we should constantly pay attention to regional issues, and we need to strengthen technical cooperation to complement all aspects.

(4) Technology transfer is affected by many factors. Although the technology transfer capacity of each region is different, they all have the same characteristics. These regions with strong technology transfer capacity all have three characteristics: strong economic capacity, high level of scientific and technological development, and strong educational resource capacity; Technological output capacity and technological transfer capacity are related to the level of economic development, and are affected by factors such as scientific and technological ability and educational ability.

Patent sorting actually and economy, factors such as geographical position has a close relationship, because each region in the policies and measures, and so on is different, although each region in promoting technology development, but is not the inevitable factors, technology transfer and technology production capacity and technology transfer capacity and impact on regional development, Innovation ability has a great effect on the economy. The stronger the innovation ability is, the more patents it brings, the better the quality, so that the technology transfer is more excellent, and the competitiveness naturally becomes an advantage.

## **VI. SUGGESTIONS AND COUNTERMEASURES**

### **6.1. Implement patent protection measures**

Under the status quo of China's patent output, different ways need to be adopted in different aspects, in-depth propaganda technology and intellectual property rights at a high level in the country, the establishment and improvement of legal protection of patent intellectual property rights and related rights, so that everyone can realize the importance of patents; In the provinces, cities and areas, the excellent patented technology in the region shall be publicized, and the excellent research and development process of the party concerned may be publicized, and protective measures may be set up in the region; In enterprises, RESEARCH and development institutions, universities and other output institutions to give protection policies, in these institutions to set up some special rights protection, reward individuals to apply for legitimate rights protection, to provide protection.

### **6.2. Publicity and implementation of preferential policies**

The government's preferential policies to a huge increase in big ways, establishing the special fund for the country or a special bonus, in various provinces, encourage the development of technology, it can even give some money to encourage, to establish accurate to r&d people in areas of incentives, and even can be extended to the transferee, when individuals have strong technology development, It can promote the personal RESEARCH and development process, reduce the income tax in his personal harvest, and give some rewards to stimulate the enthusiasm of the research and development personnel.

### **6.3. Establish an "industry-university-research" interaction mechanism**

Patent technology transfer is an important part in manufacture-learning-research cooperation, although the domestic scholars have realized the importance of "industry-university-institute" cooperation, but there is no practical measures, although in the industry-university-institute cooperation cooperation main body enterprise industry-university-institute cooperation mode, the relationship between colleges and universities can be divided into the campus, two-way consortium cooperation mode, multi-directional cooperation pattern and so on a variety of ways, but there is no legislative guarantee. Therefore, we also need to appropriately learn foreign ways in order to maximize our own development, and the great development of economy and technology is the best result.

### **6.4 Develop technical institutions**

Countries in the aspect of the government should set up a special office to engaged in intellectual property management of patent technology transfer includes two aspects of domestic and foreign various cooperation, develop their own patented technology service organization, set up information platform, set up a patent technology property right management, provinces and cities in the area to encourage learning, belong to the area in the country's institutions, organizations, It can communicate with the upper level institutions in real time, and give good suggestions to the upper level in the communication, promote the nationwide, vigorously cultivate talents, and carry out the talent training of technology transfer.

### **6.5 Establish a patent valuation system**

Under the current development of The Times, the valuation of patent technology has become a worldwide difficult problem, domestic law has a lot of space for its valuation methods, according to China's national conditions, the establishment of compulsory evaluation system including mandatory evaluation and conditional mandatory evaluation, in order to maximize the integrity of appropriate evaluation.

## **VII. CONCLUSION**

Nowadays, China has entered a period of development and reform. With the continuous development of patent technology in generation and innovation, we should pay more attention to technology transfer. In the development process of China has formed a set of their own patented technology organization system and legal protection system, patent transfer has the obvious characteristic, is it because of a lack of coordination mechanisms and policies to encourage such problems as not enough, the structure of the staff can't meet the demand, led to a patent has become the most hot now and the most concerned topics.

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