Study on the Management of Intellectual Property in China Universities
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Abstract. Universities have become an important source of intellectual property in China. However, there are some issues in the management of intellectual property in China universities such as lack of awareness of intellectual property rights, low patent quality, low conversion rate, lack of specialized management institutions and talents etc. These problems are caused by the existing scientific research models, scientific research evaluation systems and scientific research policy in China. Therefore, universities should reform the existing scientific research evaluation system, set up specialized intellectual property management institutions, and strengthen intellectual property education among scientific research personnel.

Introduction
Nowadays, the world has entered the era of knowledge economy, and intellectual property has become the core resource for a country, society and enterprises to effectively compete in the global market and fulfill economic growth eventually. Universities have three major functions that are teaching, research and serving for society. With the development of the knowledge economy, due to the comprehensive advantages in technological innovation and personnel training, universities have become an important source to produce intellectual property in China. However, in practice, there are many issues in the status quo of management of intellectual property in China universities.

The Issues in Management of Intellectual Property in Chinese Universities
The Lack of Intellectual Property Awareness
As a highland for scientific research and innovation, China universities produce a great number of patents every year. However, many university researchers lack of the awareness of intellectual property rights. Although the concept of obtaining a patent license has been deeply rooted in their minds, many university researchers still don’t understand what the nature of intellectual property are. Intellectual property rights are essentially a kind of property rights and are intangible property rights that correspond to tangible property rights. Being a kind of property right, it must be valuable, usable, and exclusive, and it can bring certain economic benefits to the right-holder. This is the important reason in practice why a country or a company considers its own advanced intellectual property as valuable wealth. At present, among the vast number of researchers in universities in China, most people regard patent authorization as the result of scientific research work, while neglecting the conversion and application of patents. The nature of property rights of intellectual property is not reflected.

The Low Patent Quality
At present, among the many patents produced by universities in China, the proportion of high-quality patents is relatively low. The so-called high-quality patent means that the patent itself has high research value and market value, which can lead to technological breakthroughs and economic benefits. The statistical data from the State Bureau of the Intellectual Property in 2015 shows that among the three types of patents including inventions, utility models, and design patents authorized to universities, only 17.6% were the invention patents [1]. At the same time, the ratio of patent applications and authorizations of universities is also relatively low. According to the data from the State Bureau of the Intellectual Property, from 1986 to 2015, during the past 20 years, the ratio of
patent application and authorization of universities was only 52.1% [2]. It means that nearly half of the patent applications of universities are not authorized by the state. This reflects the lower quality of patents produced in universities in some sense.

**The Low Patent Conversion Rate**

The original intention to establish a national patent system is to grant patentees exclusive rights and encourage them to convert their patents to production practices so as to promote science and technology innovation and enhance the social productivity. Therefore, conversion is the ultimate goal of patent authorization. Although China universities now produce many patents each year, the patent conversion rate is relatively low. According to the data from the State Bureau of the Intellectual Property in 2014, compared with 68.6% of the patent conversion rate of the company in the same year, the patent conversion rate of universities is only 9.9%[3]. This shows that most of the patents produced in universities only stay in the "rights voucher" stage, and it is still far from the true purpose of promoting technology innovation and productivity in practice. At present, there are nearly 800,000 professional researchers in universities in China. Until now 70% of national key laboratories have been set up in universities. Each year universities almost undertake more than half of all kinds of national research projects. However, there are not many examples in practice showing that the good social and economic benefits obtained from the conversion of patents produced in universities. This is also another manifestation of the relatively low patent conversion rate in universities.

**The Lack of Intellectual Property Management Institutions and Talents**

At present, although the patents generated by universities occupy a great part in the total of the whole country in China, universities are seriously lacking in the establishment of agencies of intellectual property rights management and the professional management personnel. At present, besides some key universities that have strong scientific research power have set up independent agencies for intellectual property rights management at the school level, most other universities do not have independent agencies of intellectual property rights management, instead integrating the intellectual property management functions into the office of scientific research management. At the same time, there are serious shortages of talents in intellectual property management in universities. The management of intellectual property is a complex process of multi-professional knowledge that requires its administrators to have multidisciplinary expertise, including but not limited to scientific and technical knowledge, legal knowledge, and business knowledge. Therefore, the personnel engaged in the management of intellectual property must have composite talents, a composite background of science, law and economy would be much better. This is the key reasons why the universities in developed countries usually have lawyers who specialized in intellectual property engaged in management and services of intellectual property.

**The Analysis of the Reasons of Issues in Management of Intellectual Property**

**The Existing Scientific Research Model in Universities Causes the Lower Quality of Patents**

Firstly, universities in China generally organize researchers who have the same research subject and direction into groups to carry out scientific research activities. This type of research model results in the fact that each research team is usually small in scale, and the research capabilities are limited. It makes it difficult for universities to concentrate their research resources on scientific breakthroughs, and inevitably fail to produce high-quality patents. Secondly, traditional scientific thinking in China universities is a mode of "introduction, digestion, absorption, and innovation." Under the guidance of such thinking mode, the innovation power of scientific research activities in universities is insufficient. Many scientific research works only stay on the stage of simple imitation and partial improvement of existing foreign technologies, and it is difficult to produce the original work required for high-quality patents.
The University’s Scientific Research Evaluation System and Research Policy Orientation Lead to Low Rate of Patent Conversion

Firstly, the evaluation indicators for scientific research work in universities always value quantity than quality, and form than application. It is much more serious in indicators setting of the evaluation of patent. For example, the “Discipline Evaluation Index System for China Universities” ruled by the Ministry of Education uses the number of patents as an indicator, while ignoring the application of patent conversion. Secondly, in the various scientific research policies, how many patents would be obtained through the project research is an important factor that influences whether the project can be founded and pay little attention to the conversion and application of patents. Thirdly, the universities’ patent funding policy value patent number than conversion. At present, in order to achieve better rankings in various appraisals and evaluations, universities have made incentive and funding policies for scientific research works. As to the patent application, universities usually grant a full subsidy for patent application fees in advance, and reward the patent afterwards, but do not care whether the patent is converted and applied in practice. Such kind of policy led to the fact that researchers had no cost constraints when applying for patents, and only counted quantities regardless of quality. After obtaining the patent authorization, without further relevant policy incentive, the researchers would have the patent certificate “shelved” and the patent would turn to be "The right lying on a certificate paper". The function of the patents in the promotion of social innovation and productivity doesn’t work at all.

The Lack of Interest Motives Causes the Shortage of Agencies of Intellectual Property Management in Universities and the Professional Personnel

As mentioned above, besides some key universities, most of the universities in China do not have independent agencies for intellectual property rights management. It can be attributed to the fact that the universities do not pay enough attention to the work of intellectual property, and another more important reason is that the offices of intellectual property management lack interest motives. Firstly, the offices of intellectual property management in universities, whether they are set up independently or affiliated with the office of scientific research management usually do not share the benefits of patent conversion. Actually, the patent conversion is a commercial profitable behavior. Because they do not share the benefits, the office of intellectual property management in universities lack the enthusiasm for setting up independent agencies. In practice, it is reflected that the current work functions of the intellectual property management in universities are very simple, usually only include the enacting of management policies, statistics of patent data, simple administrative work, and pay little attention to the conversion and application of patents. Secondly, due to the no-sharing of profits from patent conversion, the jobs of intellectual property management in universities will not be able to attract high-level talents with a multidisciplinary background in technology, law, and economics to apply for, resulting in the status quo that the universities are short of professional personnel in the management of intellectual property.

Strategies for Solving Issues in the Management of Intellectual Property in Universities

Strengthen Education about Intellectual Property and Clarify Intellectual Property Rights

Firstly, universities should carry out various education activities focusing on intellectual property rights among the researchers. Through seminars, lectures, essays, and multimedia publicity, the awareness of intellectual property should be firmly established in the researchers’ minds and make them form the most widely recognized value of intellectual property. Secondly, the nature of the property rights of intellectual property rights should be clarified, and use it as an effective economic leverage that property rights should have. In the management of intellectual property rights, how to convert the technological advantages of patents into economic advantages is the key to improving the patent quality of universities. Universities should correctly evaluate the intangible value of patents, enacting management systems in accordance with national laws and regulations and give right holders appropriate economic benefits. All these measures will have intellectual property return to the nature of property rights.
Reforming the Evaluation Index System for University Scientific Research Works

Firstly, when establishing various evaluation systems in universities, it is recommended that the number of patents should not be solely emphasized, and the value of patent conversion and serving the society should be taken as an important indicator. Therefore, the focus of patent work in universities has shifted from patent applications and authorizations to patent quality and conversion. Secondly, when setting guidelines for scientific research projects application, it is necessary to optimize the evaluation indicators for patents. Those applications that can produce patents with high conversion value and good market prospects should be given priority to be funded. Similarly, when a project is finishing, it should not only pay attention to the number of patents, but also assess the situation of patent conversion and servicing societies. Those projects that have produced positive economic and social benefits should be given priority to be finished. Thirdly, the patent award system should be reformed. The current method of full funding of patent application fees should be changed to a phased funding method. That means when funding is conducted comprehensive consideration shall be given to the indicators such as the quality of patents, the prospects for the conversion of patents, and so on. In this new method the application fee of patents would be partially funded and the conversion of patents to serve the society would be given the priority to be funded.

Establish an Independent Agencies of Intellectual Property Management

In order to improve the quality of patents and promote the conversion of patents, universities should establish independent agencies of intellectual property management. This kind of agency not only has the function of managing patents, but also has the function of promoting the conversion of patents. In terms of operation mode, the work about patent conversion should be market-oriented, namely, it should be a project responsibility system. In this system, the salary of project staff is closely related to the market value generated by patent conversion. Thus, it would provide incentives for project staff to engage in patent conversion. In terms of distribution mode, a reasonable distribution mechanism should be established among universities, agencies of intellectual property management, and inventors. It is better to learn the good experience from the universities in developed countries. For example, an independent office of technology licensing at Stanford University in Silicon Valley can obtain a 15% management fee[4] in advance before the patented conversion proceeds, and then share the remaining income with the university and the Inventors. Through the establishment of such a rational distribution mechanism, it will inspire the agencies of intellectual property management to improve the quality of patents and promote the enthusiasm of patent conversion.

References


