

Solving the Dilemma of Transferring and Transforming Scientific and Technological Achievements through Systematic and Mechanism Reforms

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Abstract: China's scientific research system has its own special characteristics, specifically, most universities and research institutions are directly led by the government, namely, public departments. This system has the advantages of the overall arrangement and power concentration, yet numerous difficulties are, at the same time, increasingly apparent in the aspect of transferring scientific and technological achievements. First and foremost, the transfer of scientific and technological achievements is subject to rights restrictions and negative incentives. In the second place, the transformation of scientific and technological achievements faces the lack of main body. Ultimately, the operation of scientific and technological achievements is subject to multiple policies. To effectively handle the problem of transferring and transforming China's scientific and technological achievements, it is necessary to implement some specific systematic and mechanism reforms so as to achieve 'the rule of law is greater than the administration', 'the market is greater than the government', and 'the service is greater than the regulation.' The core is to introduce market mechanisms and detailed measures include: establishing a property rights system that stimulates innovation and coordinates power; reforming the management system and target assessment system; and transforming behavior management and providing related services.

1. Introduction

The transfer of scientific and technological achievements is the key to building an innovative country and promoting the deep integration of economy, science and technology, and also plays the most essential role in advancing the reform of governmental functions and constructing a service-oriented government with the main purpose of 'allocating powers to lower levels, managing people and better serving people'. China's scientific research system has its own unique characteristics, specifically, most universities and research institutions are public departments, under the direct guidance and management of the government. As for the positive aspect, the long-term institutional system has facilitated the coordination and centralized arrangement of China's scientific and technological resources. However, the current system also encountered various obstacles in terms of the transfer and transformation of scientific and technological achievements. Colleges, universities and other advanced research institutions have a large number of scientific and technological achievements with tremendous market potential, nonetheless, due to the ineffective system management, the mechanism restriction, the inability to carry out the transfer and transformation of innovatively scientific work, which finally fail and disappear from the view of the masses, that is to say, those potential scientific and technological achievements just 'melt' like the 'ice stick' without benefiting any people and bringing out any advantages. This has attracted widespread attention and become a serious concern to the research communities and policy implementers.

At present, with the deepening of reforms, China has introduced many policies to promote the transfer of scientific and technological achievements. In 2015, the right to divide scientific and

technological achievements produced in colleges and universities was established by means of legislation. Inventors and affiliates have devolved a variety of rights including the right to income and disposal, with a view to boost the output of market-oriented scientific and technological achievements and the corresponding transfer and transformation work. Various local governments have also issued various supplementary policies to support the transfer and transformation of scientific and technological achievements in colleges and universities. However, it still fails to fundamentally reverse the lack of transfer of scientific and technological achievements in Chinese colleges and universities, and obstacles such as negative incentives, policy restrictions, and lack of subjects still exist. It has become a common concern of the academic community and the government.

1.1 Current research status on the transfer and transformation of scientific and technological achievements

As early as 1996, China promulgated and implemented *The People's Republic of China to Promote the Transformation of Scientific and Technological Achievements* to promote the scientific and technological achievements of the national financial research projects and the transfer of service inventions to the national economy, known as the Chinese version of The 'Baidu' Act [1], which stipulates that China's scientific and technological achievements can have relevant rights at the level of colleges and universities, science and technology personnel, and provide legal space for the establishment of incentive mechanisms. In the past 22 years, although China has made remarkable progress in economic development and scientific and technological research, it has still been unable to address the irrelevant phenomenon of economy and technology. While the number and quality of patent applications and publications are among the best in the world, the transformation of scientific and technological achievements has not played its due role. Chang Xuhua and Li Xiao [2] used *The Compilation of Science and Technology Statistics of Higher Education* (2008-2017) in calculating the amount of patent transactions to show that the return on investment in research and development directly under the Ministry of Education is less than 4%. Du Debin [3] measured the patent license revenue of colleges and universities in different countries added by the research funds obtained from enterprises accounted for the proportion of research and development funds, the proportion of China exceeded 30%, while other innovative countries did not exceed 15%. In the case of low patent transfer income, the 'enterprise order-based' technology research and development occupied a dominant position, indicating that the results of the internal research direction, scientific research system and scientific research talent output of Chinese colleges and universities have not entered the market. There is no real transfer of scientific and technological achievements in a timely manner. For the failure of the 1996 edition of the Chinese version of the 'Dubai Act', most scholars believe that it has not fundamentally solved the channel problem of transferring scientific and technological achievements in colleges and universities, resulting in a series of issues such as 'research results cannot be transformed', 'research results are in an untransferable state', 'no people are willing to convert research results' and so on.

In 2015, the State revised *the Law on Promoting the Transformation of Scientific and Technological Achievements* (2015), and introduced *the Action Plan for Promoting the Transformation of Science and Technology Achievements* and *Several Provisions on the Implementation of the Law on the Transformation of Scientific and Technological Achievements*. The breakthrough regulations on the legal level have been made in the transfer and approval of the transfer and the flow of scientific and technological talents, which makes the basic channel for the transformation of scientific and technological achievements in China's universities have no major obstacles at the legislative level [2]. Further local government and institutional management departments responded to the relevant arrangements in the 'Action Plan' and issued corresponding preferential policies and management methods to promote the transfer of scientific and technological achievements. However, the problem of transferring and transforming scientific and technological achievements in colleges and universities has not been completely eliminated. At present, domestic scholars mainly analyze it from two aspects. First of all, some scholars believe that the current transfer of scientific and technological achievements is supported by legislation rather than 'supporting

policies'. It is believed that the current transformation of scientific and technological achievements has been confirmed on issues such as ownership, but in the course of its practice. There are insufficient supporting policies brought about by 'policy gaps' and 'policy conflicts': the evaluation system and the imperfect talent system in China's scientific research [4], and less demanding policy tools [5], the lack of convergence between some of the policies [6] and other issues. Those things have caused institutional obstacles in the transfer and transformation of scientific and technological achievements. Secondly, the lack of transfer conversion mode and mechanism makes it hard to ensure the progress of transferring and transforming the current scientific and technological achievements. It is believed that the main problem of transforming scientific and technological achievements in universities start late, and it is necessary to learn lessons from international experience and build scientific and technological achievements that are suitable for China's scientific research system and the economic market. Li Jianzhong[7] put forward that the root cause of the low conversion rate of scientific and technological achievements in China's universities is that scientific research and market technology have no target, an appropriate operation mode and a well-organized operation process. In the process of studying how to construct this model, several ideas have been proposed by domestic scholars: Xie Wenfeng [8] has put up a way of setting up private-owned joint ventures by private companies and schools; Wu Wei [9] suggested establishing the 100% holding company of university like University of Oxford's Isis to transfer technological achievements; Guo Yingyuan [10] mentioned an useful example on the establishment of a professional achievement transformation team or technology transfer office under the existing management system of the American Ivy League University to carry out the unified management mode of generational management and so on.

Summarizing the current domestic analysis as well as the solution and countermeasures to transferring scientific and technological achievements, based on policy analysis and model reference, the authors respectively provide an analytical perspective for the further improvement of transferring and transforming China's scientific and technological achievements from the aspects of system and mechanism. However, it does not propose clear reform directions and measures at the institutional levels. Under the strategic needs of China's innovative national construction and the deep integration model of production, education and research, it is necessary to systematically adjust the relationship between law and administration, and market, and the relationship with the government, relationship between service function and regulatory function.

2. The systemic and institutional dilemma of transferring scientific and technological achievements

Although *the Law on the Promotion of the Transformation of Scientific and Technological Achievements* has provided a legal channel and corresponding market incentives for the transfer of scientific and technological achievements. However, the problem of lacking of the market mechanism for the transfer of scientific and technological achievements in China's colleges and universities has not been resolved. There are market incentives and no operational mechanisms. The inventor's right to dispose of scientific and technological achievements and the right to benefit cannot be smoothly transferred. Universities and institutes have set up a transfer office for scientific and technological achievements, but it cannot play a role, which can mainly be divided into three aspects:

2.1 Transfer of scientific and technological achievements has been negatively motivated and restricted by rights

At present, China has clarified from the legislative level that the right to dispose of scientific and technological achievements and the right to benefit are entirely attributed to individuals and affiliated units. However, since the ownership still belongs to the state, it is exercised by the unit. Therefore, its operation is still subject to *the Measures for the Administration of State-Owned Assets* of the Ministry of Finance. However, *the Measures for the Administration of State-Owned Assets* does not have specific provisions for intangible assets, but because of the natural volatility of intellectual property values and the insufficiency of China's intangible assets assessment and lack of professional institutions, problems still exist such as evaluation difficulties. Although governments at all levels

have made it clear that there is no need for the Ministry of Finance to approve the transfer of scientific and technological achievements in colleges and universities, and even some places do not need to report, but in the follow-up operations, colleges and universities still face the potential risk of losing state-owned assets.

Meanwhile, there are also restrictions on the rights under the multiple administrative regulations in the implementation level that has already divided the relevant rights of scientific and technological achievements. Because *the Law on the Promotion of the Transformation of Scientific and Technological Achievements* does not have clear space and subject to the exercise of many specific implementation links. The administrative departments of governments at all levels, based on their own goals, have imposed many restrictions on the handling of scientific and technological achievements of research institutes and universities, and there are many conflicts in government affairs. In the process of implementing ‘Ten Tenets in Beijing School’, although the municipal level has already made provisions for the decentralization of disposal rights and income rights, most colleges and universities in Beijing are managed by the Ministry of Education and have not been passed and forwarded by the Ministry of Education. Under the circumstance, the promotion of the transfer of scientific and technological achievements and the transformation of the property rights system in Beijing universities is still impossible. A similar situation still exists after the revision of *the Law on the Promotion of the Transformation of Scientific and Technological Achievements*. At present, there are many uncoordinated regulations on *the Law on the Promotion of the Transformation of Scientific and Technological Achievements* and *the Measures for the Administration of State-Owned Assets and the Company Law*. For example, *Promoting the Transformation of Scientific and Technological Achievements*. Article 18 of the Law stipulates that research and development institutions and institutions of higher learning established by the state may independently transfer, license or invest in scientific and technological achievements, but they shall be listed, traded in the technology trading market, and auctioned. Wait for the price to determine the price. Although the market-oriented pricing principle of scientific and technological achievements has been clarified, the approval process in the process of transfer and transformation of scientific and technological achievements has been eliminated. However, there is no clear requirement that no assessment is required. Although it is not necessary to implement relevant provisions of the *Interim Measures for the Administration of State-Owned Assets of Institutions* for approval and filing, it is impossible to circumvent the provisions of Article 38, that is, the investment in scientific and technological achievements should be evaluated and the provisions of Article 40, it should be commissioned by an evaluation agency with asset evaluation qualifications. Leading to the transfer of scientific and technological achievements in the actual work still needs to be evaluated, so that the transfer of scientific and technological achievements is hindered by the ‘applicable regulations’ that are ‘useless’.

The problem of uncoordinated goals within colleges and universities has created a severely adverse incentive for the transfer of scientific and technological achievements. Because of the right to dispose of and benefit, the inventor and affiliated units have a strong incentive to transfer scientific and technological achievements. However, the administrative department of colleges and universities has not formed a driving force for the transfer of scientific and technological achievements because of the acceptance of the single national target evaluation system. Even because the transfer of scientific and technological achievements will occupy human and material resources, affecting the efficiency of completing indicators, colleges and universities are even more reluctant. Subordinate units and scientific research personnel carry out the transfer of scientific and technological achievements. At present, the overall management model of colleges and universities in China is still based on the differential distribution under the single dimension of the assessment system, whether it is the past evaluation mechanism of ‘985’, ‘211’ or the current ‘double first-class’, scientific research results output publishing with high-level papers is the only yardstick. This assessment system is the guiding standard for financial allocation support that occupies most of the income sources of colleges and universities. It is also the core indicator of the work results of managers at all levels under the management system of colleges and institutions. Driven by this goal, the homogenization of resource pooling and administrative management in all Chinese colleges and universities is intense. While

serious resource waste and low output are caused, the lack of attention to the transfer of scientific and technological achievements is driven. Even if subordinate units set up companies and scientific research personnel to leave their jobs or part-time jobs will affect the progress of the teaching tasks and scientific research tasks of the original school plan, colleges and universities will set negative incentives for scientific research personnel or affiliated units to carry out work related to the transfer of scientific and technological achievements. Obstacles were set in the implementation rules for the division of scientific and technological achievements rights and the regulations on the transfer of scientific research personnel. The transfer of scientific and technological achievements has been hindered by ‘man-made’.

2.2 The transformation of scientific and technological achievements faces the lack of the main body

At present, many colleges and universities have set up franchise offices which are mainly responsible for the promotion of the transfer of scientific and technological achievements. However, most franchise offices have not played a major role in transferring scientific and technological achievements. It has not played a role in promoting the transformation and transfer of scientific and technological achievements, and has not carried out effective asset management and market-oriented operations on scientific and technological achievements. The core reason is the lack of a unified management system for people and finances. Nowadays, the franchise offices of colleges and universities still adopt the administrative system of public institutions, and the management of people’s financial affairs is separated, especially the right to distribute financial and personnel management is still in the hands of the school. This makes the franchised offices or related institutions of colleges and universities lack the incentive mechanism to promote the transfer of scientific and technological achievements from the root cause, and furthermore the operation lacks vitality. On this basis, various types of offices and franchisees concerning the transfer and transformation of scientific and technological achievements have extended the management model stipulated by the implementation rules of diverse institutions. However, because it connects two sides of scientific research and development and market economic activities, involves multiple parties, engages in multiple jobs, has high flexibility and innovation, and lacks appropriate behavior assessment and evaluation models. It is difficult to realize the transfer and transformation of a large number of scientific and technological achievements due to ‘regularity’.

On the other hand, the separate management system of people’s finances renders institutions to be lack the ability to operate scientific and technological achievements as assets. *The Law on Promoting the Transformation of Scientific and Technological Achievements* provides the units and schools with the right to dispose of scientific and technological achievements and income. However, due to the lack of a unified management system for all types of franchisees, the organization cannot apply these rights to continue operations and conduct complex transactions, which has seriously inhibited the advancement of the transfer of scientific and technological achievements in colleges and universities. On the one hand, it cannot provide support for the transfer and transformation of job inventions by researchers. After the scientific and technological achievements exist in the form of intellectual property rights patents, the expenses incurred by their patent holdings, third-party valuations, etc. cannot be allocated to the main body budget of the technology transfer institutions of colleges and universities, and can only be borne by inventors individually, greatly improving the cost of scientific research personnel to transfer scientific and technological achievements. On the other hand, the lack of scientific and technological achievements as an intangible asset for asset management capabilities and space. It is difficult to carry out the packaging and combination of intellectual property rights, and the licensing methods such as volume licensing are difficult to carry out. All kinds of franchises and offices lack of the ability to track and manage assets and related revenues, and reasonable, legal, comprehensive, innovative and complex operations.

The management system of separation of people’s financial affairs makes it more common for various types of franchisees and offices to serve as a platform for promotion and display of existing scientific and technological achievements. However, due to the large number of scientific and

technological achievements, there is still a ‘last mile’ from the final products and processes. The distance has a high ‘identification’ information cost, and the realization of the economic value of the scientific and technological achievements itself often requires other technological innovations or supporting policies, but these searching costs need to be borne by the enterprises in the market, greatly reducing the enterprises’ enthusiasm of transferring scientific and technological achievements.

2.3 The operation of scientific and technological achievements is subject to multiple restrictions

At present, although governments at all levels, colleges and universities have introduced relevant regulations to promote the transfer of scientific and technological achievements, these regulations still have many restrictions on the specific objects, forms and subsequent management of scientific and technological achievements. For one thing, colleges and universities have the management concerns of ‘chaos as letting go and dead as regulating’. For another, researchers have various concerns about the rational, legal and compliance operation of service inventions. A large number of emerging models that have led to the transfer and transformation of scientific and technological achievements have entered a ‘rule of blindness’, colleges and universities and related departments are not explicitly prohibited, nor do they conduct norms. When the scientific research personnel and the subordinate units are engaged in specific work, they are worried that once they enter the scope of the ‘blind zone’, the follow-up clearly stipulates that they are responsible for the illegal operation after the release, and evade the transaction and operation behavior in the process of transferring and transforming many scientific and technological achievements. For example, at present, there are many restrictions on the ‘recessive’ restrictions on the transfer path and transaction mode of intellectual property rights and the subsequent asset operation in colleges and universities. Related transactions and derivative transactions of intellectual property rights are still illegal operations that cannot be carried out. It has led to a single path of scientific and technological achievements transferred from scientific research institutions and universities, which have constrained the way and vitality of transferring scientific and technological achievements into the market sector in various forms.

3. Reform proposals to solve the dilemma of transferring scientific and technological achievements

To solve the dilemma of the transfer and transformation of China’s scientific and technological achievements, we need to start with the reform of the existing system and mechanism. Transform scientific and technological achievements into the power and responsibilities of all parties through institutional reform, and formulate a series of supporting policies to eliminate the institutional barriers to the market-oriented flow of innovative resources and establish incentives and innovations. The market environment fully mobilizes the enthusiasm of the main body of innovation. Ensure continuity and implementation of the innovative policy support system. Through the reform of institutional mechanisms to achieve the transfer of scientific and technological achievements, ‘the rule of law is greater than the administration,’ ‘the market is greater than the government,’ and ‘services are greater than regulation.’ The core is to introduce market mechanisms. We will build a resource-allocated model based on the nature of the enterprise and market-oriented, and accelerate the formation of a deep integration system of production, education and research.

3.1 Establishing a property rights system that stimulates innovation and coordinates power to achieve ‘the rule of law is greater than the administration’

To break the institutional mechanism of transferring and transforming scientific and technological achievements, we must first start with the previous property rights system and build a new one that encourages innovation and coordination. The reason why the transfer of scientific and technological achievements has been subject to multiple rights restrictions or even negative incentives is because there is currently a problem of ‘administration is greater than the rule of law’ in the management of property rights in scientific and technological achievements. It is necessary to replace ‘administrative management’ with ‘legal norms’, open up channels for the transfer of scientific and technological

achievements from the legal level, clarify the rights and responsibilities of all parties, and implement *the Law on Promoting the Transformation of Scientific and Technological Achievements* into real life.

On the one hand, start from stimulating innovation, reduce the cost of ‘transferring’ and exercising, clearing the administrative obstacles such as long management and policy division, and comprehensively solving the current *Promotion of Scientific and Technological Achievements Transformation Law* and *State-owned Assets Management Measures* and in the conflicting part of *the Company Law*, after the devolution of the right to dispose of scientific and technological achievements and the right to revenue, the links between scientific and technological achievements, technology entrepreneurship, investment, and technology participation in the stock market need to be ‘two-step’ because of the restrictions on corporate law and state-owned assets management measures. Coordinate and correct the practices such as ‘repetitive operation without producing actual results’, clarify the legal status of multiple operational paths in the process of transferring and transforming scientific and technological achievements, and reduce the administrative costs faced by inventors and affiliates in the corresponding transfer and transformation work.

In the meantime, improve researchers’ innovative income. Establish a model for dividing the intellectual property rights of inventors and research teams. Intellectual property is the value output of innovative talents for complex labor. In order to establish the process of property rights definition under the joint action of knowledge logic and capital logic, in addition to affirming the power of capital, it is necessary to fully reflect the value of scientists in the form of property rights so as to stimulate the enthusiasm of relevant people for technological innovation. On the basis of the existing intellectual property disposal rights, income rights, and distribution rights, we should further explore the model of ownership of the service inventions inventors and their units. In the process of clearing the technology transfer at the legal level, the ownership of the transaction subject is attributed, and the transfer of intellectual property rights in the ownership of the property enters the market sector to clear the system barrier.

On the other hand, it is necessary to coordinate the power, focus on the exclusive management system of intellectual property as an intangible asset, and ensure that the powers and responsibilities of the three parties in the process of transferring scientific and technological achievements each other. Different from the previous state-owned tangible asset management model, it adopts a state-owned intellectual property asset management system that is more flexible and conforms to the law of innovation value. From the legislative level, it clearly clarifies the responsibility and rights of colleges and universities as state intangible assets as custodians, and eliminates the ‘worries’ when colleges and universities are engaged in the transfer of scientific and technological achievements.

3.2 Reforming the management system and the target assessment system to achieve ‘the market is greater than the government’

How to dispel the concerns of ‘chaos as letting go and dead as regulating’, the key is to solve the problem of the nature of the transfer and transformation of current scientific and technological achievements. Give franchisees and offices full rights to operate independently. Use the market mechanism to guide and standardize the transfer and transformation of scientific and technological achievements. Transform the issue of ‘government is greater than the market’ in the process of transferring scientific and technological achievements. Reform the target management and asset management model of the franchise institutions for scientific and technological innovation achievements in colleges and universities. Exploring the current unified management mechanism of the university’s technology transfer office and university science park, piloting corporate reform, independent operation, equity participation, and direct access to the Science and Technology Department of the Ministry of Education, etc., giving the institutional entity the right to operate independently and the financial operation rights. Combined intellectual property operation space. The main body of the franchise organization can form a mode of income management, behavior supervision and indicator evaluation for intellectual property rights operation and corresponding solutions. It stimulates the motivation for internal researchers to set the environment and goals that are conducive to market-oriented innovation activities. At the same time, it also uses the economic

scale and the scope of economic effects generated by the main institutional body as the spatial carrier of innovation output to enhance the transformation of intellectual property rights.

At the level of colleges and universities, in the process of allocating and assessing resources, relevant indicators of transferring and transforming scientific and technological achievements should be introduced, and a multi-dimensional target assessment system should be set up to build a dynamic mechanism for the deep integration of production, study and research. On the one hand, from the perspective of resource pooling, colleges and universities are encouraged to carry out work related to the transfer of scientific and technological achievements. On the other hand, a rational division of labor between colleges and universities is formed. Through multi-dimensional assessment, colleges and universities are independently classified to achieve differentiated development. It has promoted the development of China's scientific and technological system in the middle of the deep integration of science, technology and economy, and avoided the inefficiency caused by the homogenization of scientific research resources under the single assessment target.

3.3 Transforming behavior management and providing related services to achieve 'control is greater than service'

Accelerate the transformation of functions of governments at all levels in transferring scientific and technological achievements and transforming behavior management into negative inventory management. It is essential to provide effective supervision, regulation and protection for new models, new trading mechanisms and new entities in the process of IP transfer. That is to ensure that the process of continuous division of labor and efficiency optimization in the process of intellectual property industrialization is not affected, but also avoid a large number of negative externalities and public losses caused by monopoly in the new market, coupled with behaviors which are not conducive to the healthy and rational development of intellectual property industrialization. Besides, it is of vital importance to thoroughly eliminate researchers' concerns in the transfer and transformation related work and their worries to shoulder responsibilities after the accident.

Increase financial support for the transfer and transformation of scientific and technological achievements, and provide space carriers and process carrier infrastructure construction. Set up a special government guidance fund to incite social capital participation through leverage, and form a construction model in which enterprises and colleges participate in. Focus on building a platform for the transfer and transformation of scientific and technological achievements with regional influence and pilot and accelerated laboratories. Achieve the integrated development of the transfer and transformation of scientific and technological achievements, open up the information exchange channels of production, education and research, and lead enterprises to participate in the transfer of scientific and technological achievements from the source to form a deep integration system of production, education and research.

References

- [1] Xie Di, On the Perfection of Intellectual Property Management System of State-owned Scientific and Technological Achievements, *China Administration*, vol.1,2018.
- [2] Chang Xuhua and Li Xiao, The leading mode, common problems and countermeasures of the transformation of scientific and technological achievements in Chinese universities, *World Science and Technology Research and Development*, vol.10, 2018.
- [3] Du Debin, A comprehensive and objective understanding of the transformation of scientific and technological achievements in Chinese universities, *Guangming Daily*, 2015-12-12.
- [4] Huang Junyan and Lü Jianqiu, Analysis of the Status Quo of the Reform of Science and Technology Management System in Colleges and Universities, *Science and Technology Management Research*, vol.37(3), pp:129-132, 2017.

- [5] Wang Jingjin, Liu Li and Wang Fei, Quantitative Research on Policy Texts of Science and Technology Achievements Transfer and Transformation in Universities and National Research Institutions, *Science Management Research*, vol.4, pp: 24-27, 2017.
- [6] Xu Jie, Institutional Barriers and Elimination of the Transformation of Scientific and Technological Achievements——To Accelerate the Construction of an Innovative Country , *Modern Law*, vol.2, 2018.
- [7] Li Jianzhong, Discreteness and Self-consistency of Science and Technology: The Roots and Countermeasures of Low Transformation Rate of Scientific and Technological Achievements in Chinese Universities, *Science and Technology Management Research*, vol.11,2018.
- [8] Xie Wenfeng, New Trends in Technology Transfer Models in Colleges and Universities: Exploration of Public-Private Partnerships, *Jiangxi Social Sciences*, vol.8, pp:222-230, 2017.
- [9] Wu Wei, Fan Huiming and Yu Xiao, Analysis on the Enterprise Operation Mechanism of University's Scientific and Technological Achievements Transformation——Taking Isis Company of Oxford University as an Example, *Higher Education Research*, vol.4, pp:110-114, 2017.
- [10] Guo Yingyuan, Zhang Sheng and Du Wei, Research on the Allocation of Rights of Scientific and Technological Achievements Transformation in Universities——An Empirical Study Based on American Ivy League University, *Science and Technology Management*, vol.4, 2018.