

the development of technology transaction market. Thus, Jinan has to seize the strategic opportunities, it will lead the

Shandong Province even the entire North China to open the new look of the development of technological innovation.

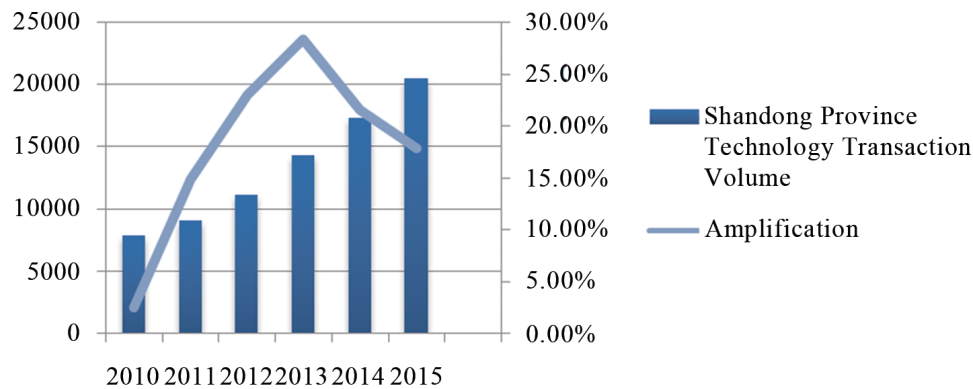


Figure 11
Shandong Province Technology Transaction Volume During 2010 to 2015

Data source: Jinan Science & Technology Bureau; Torch High Technology Industry Development Center, Ministry of Science & Technology.

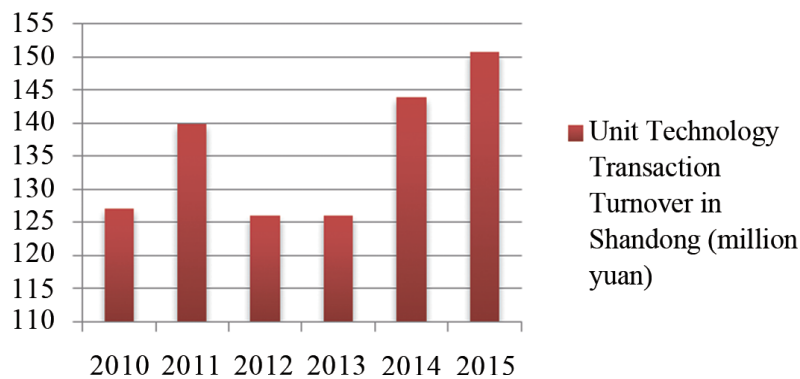


Figure 12
Shandong Province Technology Transaction Volume During 2010 to 2015

Data source: Jinan Science & Technology Bureau; Torch High Technology Industry Development Center, Ministry of Science & Technology.

4. EXISTING PROBLEMS IN JINAN TECHNOLOGY MARKET

4.1 Jinan Technology Market Legal Environment Needs to Be Improved

Technology market is an intellectual property rights transaction market. The protection of intellectual property rights is a prerequisite for the technology commercialization and the technology transaction market establishment, and it is an important “rules of the game” in technology transaction market. Once the intellectual property rights trading is lack of the strong legal protection, there will lead to confusion in the technology market, and hinder the technology market transactions.

The intermediate output of technology innovation of Jinan which is also called the application and the authorization of innovation patent shows a rising trend in recent years. However, technology innovation did not translate into technology output in the end, and in 2015 Jinan technology transaction turnover even appeared

negative growth. The lack of Jinan technology market legal system construction is the key reason for this phenomenon. There are not particular intellectual property rights legal documents aimed to the technology market in Jinan until now.

The “Jinan Technology Market Management Approach” was announced by Jinan municipal government in 2001, but the “management approach” failed to rise to the “law,” and there is even no further amendment in recent years.

The “Jinan Intellectual Property Strategy Outline” was issued by the Jinan municipal government in April 2009 in Jinan, but the “outline” only protect the property from the macro strategic consciousness, it cannot play a substantial protective effect, and the Jinan municipal government has not issued a similar document since 2009.

In addition to the lack of laws and regulations, supervision and management of the technology market is not perfect, and many management offices are also hollow, so all these results in infringement and fraud took place frequently in Jinan technology market. Just

improving the laws and regulations, the law is only a mere scrap of paper with the weakness of the law enforcement department. The legal environment needs to be improved in Jinan technology market, and the law enforcement departments should have strong actions.

4.2 The Driving Force of Jinan Technology Transaction Policy Weakness

The government's policy has a strong power to guide a certain period of development plans, objectives and prioritizing development fields will be transformed into the direct driving force of the industry.

Jinan technology transaction turnover ranked the first in Shandong province before 2012. But the Jinan technology transactions turnover accounted for the proportion of the all transaction of the whole province has reduced greatly, while Qingdao has maintained a high growth rate, taking the place of Jinan and ranked the first since 2013. In this process, the guidance and the support of the Qingdao municipal government policy played a crucial role. In October 2013, Qingdao technology market put into operation officially which established by the Qingdao Science and Technology Bureau and the Qingdao national high tech Zone Management Committee. With the ratified reply of Ministry of Science and Technology of the People's Republic of China, Qingdao established National Ocean Technology Transfer Center in 2014. With the government policy driving, Qingdao technology market maintains a rapid growth trend. On the contrary, Jinan does not have the relevant policy of developing technology transaction market preferentially in recent year. The government does not think highly of technology transaction market, there will not be able to form the strong power in the whole society. Obviously, the reason for the continue downturn in Jinan technology market turnover is the weakness of driving force of the technology transaction policy in Jinan. Therefore, the guidance of technology market and the preferential policies is crucial.

4.3 The Development of Jinan Technology Transaction Intermediary Lags, the Service Direction Is Not Clear

The service function of Jinan intermediary is not clear, the imperfect system is a big problem in Jinan technology market. In the analysis of the horizontal comparison between Jinan and the top five cities about the technology transaction market, as I mentioned in an earlier post, the successful development model of five cities is all based on the perfect intermediary service. In the case of Wuhan, there has to have 30 demonstrative technology transaction intermediaries, including 16 national technology transaction demonstration organization, 14 provincial, and 10 municipal, up to 2015. Jinan only has 7 Productivity Promotion Centers which are a little more authoritative so far.

Once the intermediary service missed, the development of technology transaction intermediary lags the technology

output products, there will appear fault phenomenon, thereby affecting the growth of the market. On the one hand, Jinan is lack of the authoritative demonstration technology transaction intermediaries; on the other hand, the structure of existing intermediaries is unreasonable, the management and operation mechanism is confused. About the service, it cannot really play the intermediary role, neither clear service position nor in-depth market research.

4.4 Jinan Technology Market Is Lack of Professional Talents

The sources of the intermediary practitioners in Jinan technology market are different. The abilities of workers are also different, their professional knowledge and the service quality are generally low. The whole industry is lack of the high level, professional, and versatile talents. Many workers are engaged in part-time technical intermediary activities. What is more, they use their position to earn extra profits.

At present, many colleges have opened the related major courses which located in Beijing, Shanghai and many other cities. This courses aim to technology market, and trains interdisciplinary talents for intermediaries. These colleges provide high quality talents for the local technology market continuously. At the same time, many businesses open the regular trainings to improve the service quality and professional knowledge for their staff in some China's big cities. Jinan has short coming of talent training. The colleges in Jinan do not have the plan of talent training about technology market. At the same time, the training of the agency staff is not enough, which impedes the development of Jinan's technology transaction intermediary.

5. COUNTERMEASURES TO PROMOTE THE DEVELOPMENT OF JINAN TECHNOLOGY TRANSACTION MARKET

5.1 Improve Laws and Regulations, Increase Intellectual Property Rights Protection

Compared with the conventional commodity trading, the technology transaction commodities are more complex. In technology transaction process, it needs to let the technology transferee know the advanced and applicability of the technology; on the other hand, it also needs to prevent technology leak and fraud.

Therefore, it is very important to protect the intellectual property rights. Jinan municipal government should perfect the relevant laws, especially the patent protection, and the external environment of technology transaction. For example, Jinan municipal government can set the "patent dispute settlement rules" and the "patent dispute litigation process" and other similar laws.

5.2 Enhance the Strength of the Regular of Technology Market

The department concerned has to crystallize responsibility and enforce the law sternly in Jinan. A series of things against the law, such as false declaration, falsification, which should be stricken severely. So some precautions need to be done to prevent using national preferential policies loopholes to do something for themselves. Jinan municipal government has to disclose the rewards and punishments to the enterprise which involved in illegal things and companies related to them, optimize the system of information publicity, the expert evaluation system, to improve the quality of affirmation. Normalizing technology trading market and the intellectual property review mechanism and transaction behavior. Jinan municipal government has to consummate the settlement of transactions and the risk management to advance the development of daily statistical management of technology contract.

5.3 Increase the Thrust of Science and Technology in a Multi-Pronged Way

Jinan municipal government needs to aim at the two different subjects supply and demand, giving different but effective guidance. Enterprises located in Jinan as the principal part of the technology demanders need to be supported in the tax finance aspect by Jinan municipal government. Government use Tax Lever Policy and investment allowance loan with discounted interest to build and a diverse financing channel and promote venture investment to stimulate the enterprises' demand for technology commodity. Jinan municipal government should increase the funding for research; on the other hand, it may use technical title assessment system to encourage researchers to create and develop scientific products which adapt the market environment.

5.4 Develop the Mediation of Public Service Platform

The function of technology transferring intermediary is to find demand and supply for technology and provide joint service. Jinan technology transaction market must be good at using the market mechanism to optimize the mediation system of trading platform, and then to improve intermediary efficiency of technology transfer, to use market to allocation the resources rationally; to give market decisive effort in technology transaction, consequently enhance the service level of Jinan technology market intermediaries. Jinan should focus on the development of authoritative intermediary institutions, driving regional market standardized step by step.

Jinan needs to pay more attention to use modernize management method to develop the public platform; and use data analysis methods such as Big Data to establish and perfect the technology market database, to improve

the information network. Establish technical evaluation system that divided for different business it could facilitate both sides of market demand and supply information exchange and price reference.

5.5 Strengthen the Construction of Professional Talent Team

In talents cultivation, Jinan is about to strengthen professional talent team construction, especially pays attention to college professional training. Technology transaction related to courses should be really added into the education plan to cultivate a batch of understanding law technology, market business and managements' high quality versatile talent.

Jinan needs to stay focus on training of professional and technical personnel. The quality of staff will directly affect the level of technology transaction service. Establish enterprises as the main part and market as the guidance vertical cooperation system which combines produce and research. On the one hand, the management department in Jinan organizes large scale specialized systematic training to enhance the level of workers and the level of industry access standard gradually. On the other hand, intermediary should take internal evaluation which conducted for employees. According to the results of the evaluations, company can organize special training in batches.

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