

# Study on “Government-Industry-University-Research-Financial-Technology Intermediary” Six in One Coordinated Development Mode

Zhan ZHENG & Kang ZHENG

*Hebei University of Economics & Business, No.47 Xue fu Road, Shijiazhuang, China*

**ABSTRACT:** Construction and development of “government-industry-university-institute-financial-technology intermediary” six in one mode are important for achieving sustainable innovation. However, the role of supporting resource integrating and output of innovation by government and financial institution and technology intermediary is not playing obviously. Based on development characters of integrated model and problems about how “government-financial-technology intermediary” will combine into one mode, this paper put forwards “government-industry-university-institute-financial-technology intermediary” six in one model, and reveals the key function of “government-financial-technology intermediary”, and gives suggestions which include innovation members, coordinated development mechanism and warranted policies.

**KEYWORD:** Government-Industry-University-Research-Financial-Technology intermediary; Six in one development mode; Function analysis

## 1 INTRODUCTION

The Chinese “national 12th five-year plan for science and technology” put forward some big goals. In the future five years china will construct national innovation system, the comprehensive ranking of national innovation capability will be increasing from 21th to 18th, the contribution rate of technological progress will be increased to 55 percent, the building of innovative nation will gain big process. Furthermore, china has focused on innovation driving strategy. At the same time, government proposes to enforce function of technology basement and platform, strengthen technology macro-management and integrated, innovate industry-university-research connection mechanism, play a basic market role on resource allocation, optimize social innovation circumstance.

## 2 PREVIOUS RESEARCH

This paper focused on supporting function of government-financial-technology intermediary on university-industry-research platform and coordinated integration model created by six members. Studies have made explored some topic about cooperation innovation among university-industry-research, coordinated innovation, government function, technology intermediate

function, financial function etc. This paper mainly induces research conclusion of platform function influenced by government and technology intermediate and financial organization.

Some scholars think that this integration is a collaborative process of the innovation main bodies, and the collaborative innovation has been a kind of model. For example, some think collaborative innovation is a kind of integrated innovation organization pattern cross large span which is carried out for achieve major scientific and technological innovation by enterprises, government, knowledge production organization (university, independent research institutes), intermediary institutions and the users, etc(Chen jin, 2012). Some people put forward that technology of collaborative innovation is a process or organization model which is described like contract by participants for a certain specific technology innovation target on the basis of the predecessors (Xi zhuyan, 2012). And this process or organization model can make synergistic effect, and make the overall performance greater than the sum of the individual performance. In fact these research revealed part of nature of the integration.

The research about government’s role for integration. Some scholars have done some rich research about the government involving in the industry-university-research cooperative innovation. The history which the U.S. government promotes the integration has been last hundred years, and many

research results have reflected the government's role at promoting research and development investment, R&d spillover and diffusion, eliminating barriers to technology transfer and strengthening cooperation, etc(Wu yong,2011; OECD, 1997; Senker, A.1998; Li xiaofeng, 2012).

The mediation's role for integration. It reflect in these respects: Science and technology intermediary can help level the playing field for the innovation system interface and coordination, and it's the core institutions for collaborative innovation (Yuan yijun, 2012), and reduce the transaction costs of dynamic alliance(Yan lei, 2010), and the relationship between the intermediary institutions and governments sustained the operation of the whole innovation system(Man Haiyan, 2011).

The effect of integration financial means. The research result in this respect is less. Some put forward a framework of financial intervene government-industry-university using innovation mode. This framework explained how the government coordinate financial institutions to play a role, and guide them seize the moment to intervene. The Ningbo mode show that government need effectively guide the financial institution supporting science and technology enterprises. The concept, model, the path and the carrier of cooperation between technology and financial are the driving force to achieve integration.

### 3 PROBLEMS ANALYSIS

#### 3.1 *Inadequate integration capacity on resources configuration management*

The government for innovation main body enterprises, schools, research institutions have issued some policies, but the orientation function is still not fully play .It is also not enough for the coordination and integration management of industry, university and research. The government's main responsibility is not clear and it's relatively slow when promote industry-university-research in combination with financial-technology intermediary. And the overall level is lower than the developed eastern provinces.

Enterprises in the process of innovation urgently need external innovation resources, but they are lack of integration ability. And at this time, they need government management department to help and guide them to innovate the joint, be access to government funding and join the technical innovation alliance. The government should provide information platform for enterprises, and guide them into regional innovation system, and help them make across regions and even international technology cooperation.

#### 3.2 *Insufficient capital source*

Because of multiple evaluation standard, the money which came from enterprises, the government and financial institutions are not consistent when funding a same company or project, and it may ignore the premise of the integration of industry-university-research. The company's money more pays attention to their own production's innovation and their long-term development. The government's money attaches great importance to the input for large projects and key projects, and this make some small and medium-sized enterprises and emerging enterprises can't get the funding support, and then the result can't get transformation timely. The project has the same direction with the government would get the funding more easily, but there also has the gap between the research and development ability and the expected target. And there even exist unhealthy phenomenon of money waste and embezzlement. The money of financial institutions pay attention to the return of investment.

#### 3.3 *Unreasonable mechanism of the benefit distribution*

Because in the government-industry-university-research-financial-technology intermediary innovation system, there also exist the problem that the products can't keep pace with the changes of the market development in Product promotion process, so the products can't attract the attention of the users, and they also can't get the user's recognition. So the product market share of less than expected goals and it's hard for the on research and development projects and all parties make consistent effort toward market direction. Because the industry-university-research integration's honor, intellectual property rights and economic income distribution mechanism haven't established, the instability of interest distribution reduced the integration main bodies' enthusiasm. To some extent, it hinders the improvement of the innovation system and all above make government-industry-university-research-financial-technology intermediary badly affected.

#### 3.4 *Eager to establish industry-university-research cooperation long-term mechanism*

Although the integration platform has had a certain size already, the enterprises' innovation energy and power need to be increased in the case of the relatively weak original innovation ability. The industry-university-research combined not so close, and the reserves and the introduction of high-level innovative talents of science and technology is not enough. The independent innovation policy implementation need to be further deepened. The cooperation of industry-university-institute is more and more often and the level is higher and higher, so

it should be established a long-term mechanism of industry-university-research cooperation in terms of the overall demand.

## 4 MODEL BUILDING

### 4.1 The establishment of the Government-Industry-University-Research-Financial-Technology Intermediary Model

The key of the formation of the integration is that government, the industry-university-research, financial and the technology intermediary can make a consolidation pattern that they can support each other and get mutual benefit and make win-win results. In this pattern, the main content is how government, the financial institution and the technology intermediary play a role, and support the industry-university-research main body platform to be more better. There is a conceptual model of government-industry-university-research-financial-technology intermediary integration.

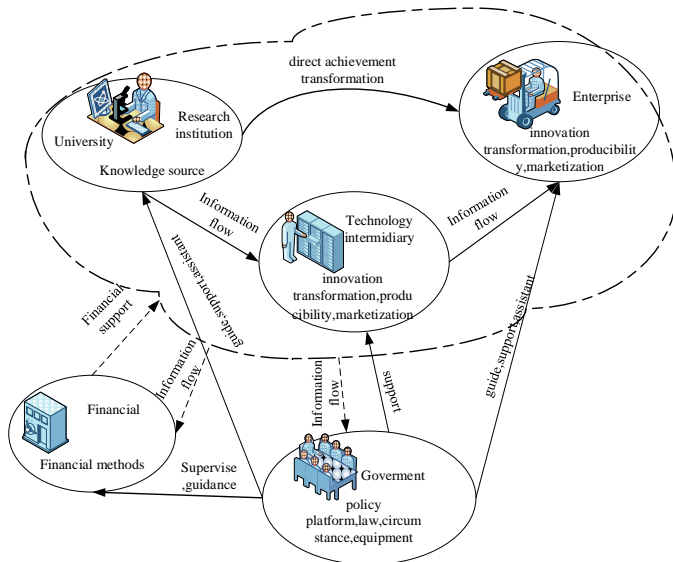


Fig.1 The Six in One Model of Government-Industry-University-Research-Financial-Technology intermediary

As shown in figure 1, industry, university, research, technology intermediary is a big platform of innovation producing and transforming and marketing. Technology intermediary help to speed up the process of knowledge and innovation's conversion and marketization. The government has varying degrees guiding role to industry, university, research, financial, technology intermediary, and he support and assist the consortium to innovate, and additionally it has some supervise and coordinate function to financial institutions. There will be a further analysis of the government, technology intermediary and financial institutions' role.

### 4.2 The functional analysis of the government, financial and technology intermediary

(1) The guiding role of government. The practice of industry-university-research cooperation at home and abroad has proved that the industry-university-research cooperation mechanism can't being spontaneously, it also can't be realized completely relying on market forces, and the industry-university-research development platform in China is relatively lag, and the internal demand is not strong, so the government's role in industry-university-research cooperation is crucial. The government should play a pivot role and play the role of good coordination in the development of integrated and coordinated model. And he should play a role of organizing, coordinating, specification, encouraging and guiding in the cooperative innovation system.

The government could provide good working environment and atmosphere including varieties policy and legal environment. Government also should provide financial capital to support the need of research and development phase and pilot phase. The government should provide preferential policies to speed up productions transformation and industrialization formed, and supervise and urge the financial institutions to develop financial products for industry-university-research, and provide financing channels and financial support through other financial instruments<sup>[10]</sup>. The government need to prompt all parties of the industry-university-research to melt for "the community of interests", and deal with the adverse factors and cultivation positive factors, and make all parties play out the biggest efficiency.

(2) The bridge function of technology intermediaries. The technology intermediary has an important role on integration's formation and development, and this had received sufficient attention in The United States, Japan, the European and other western developed countries. Technology intermediaries in China run in Hi-tech zone, incubator, Technology trading market and national technology intermediary service institutions, etc.

Technology intermediaries can help knowledge be quickly transferred, and promote the transformation and promotion of the scientific and technological achievements, and strengthen the resource flows. They also can eliminate all parties' many cooperation obstacles appeared because of information asymmetry, lack of funding and technology development, etc. In turn, they saved the transaction cost, optimized the allocation of resources and improved the efficiency of the transformation of scientific and technological achievements effectively for everyone.

(3) Support function of financial institutions. Compared with traditional industries, "government-industry-university-research-financial-technology

intermediary” strategic alliance is not the only thing of industry and university research two borders. The huge sums of money demand need financial institutions to participant, and the industry-university-research investment has so many characteristics of big investment, long payback period, high risk and multi-stage, so it’s crucial whether financing channels is open or not.

Functions provided by financial institutions such as risk aversion and transfer, corporate governance, incentive constraints, price discovery and liquidity supply can provide functional guarantee for the development of technology. The combination of bank and finance capital is essential for knowledge to become money from talent. Industry-university-research need money. The same, all financial institutions participate in the industry-university-research cooperation not only can realize the proceeds smoothly and get excellent returns on capital ,but also make innovative financial products of its own, and expand the scope of financial services business and increase their competitiveness. And they finally realize win-win.

## 5 CONCLUSION

### 5.1 *Ramming production platform cooperation mechanism*

The fundamental unit of the integration is in the relations of industry-university-research cooperation. College and universities, enterprises and science research institutions should be promoted to form a common cooperation mechanism in the exchange of social resources among them and undertake the common risk and establish common interest mechanism. Therefore, universities and science research institutions should formulate corresponding benefit policies, regulations, norms and management mode of industry-university-institute cooperation coming from the perspective of their own and according to the state's relevant laws and regulations. Enterprises should perfect the docking mechanism of university-research, and develop effective measures to improve the knowledge and innovation transforming ability. They also should strengthen management consciousness of industry-university-research and suitable training to relevant personnel.

### 5.2 *Highlight the guide of the government role*

At the same time of industry-university-research handle cooperation relationship in horizontal voluntary, equality and mutual benefit, state and government must strengthen macro-control and foster, especially play a dominant role on the sharing of information and resources. The government needs to improve the relevant policies and regulations, actively introduced preferential policies, formulate

relevant laws and regulations, consummate the system of policies and regulations and realize the sustainability of cooperation. The government also should actively improve the relevant supporting policies including advances, import and innovation in technology, science and technology plan, transformation of scientific and technological achievements and industrialization policy, etc. he also should actively introduce the preferential tax policy about enterprises to participate in the industry-university-research cooperation and guide the micro main body behavior direction of alliance of industry-university-research. The government should provide an information sharing platform and make it a share network, eliminate the obstacles appeared because of the insufficient information communication and feedback and to provide information support for their independent innovation in the system.

### 5.3 *Promotion of science and technology intermediary*

The government should nurture and develop science and technology intermediary agencies, establish technical information network and develop the intermediary services security system. Facing the disadvantage that most technology intermediary agencies institutional features are simple and the mechanism is not sound, the government should increase intermediary services through strengthening guidance, and improve the quality of service, and through various means and multiple channels to improve the service ability of science and technology intermediary. At the same time, the government should take a variety of means to establish a perfect technical information network, and organize information communication of technology achievements regularly or irregularly. The government's relevant policies and regulations and universities and research institutions' new dynamic of technology and the market information enterprises mastered gathering together to make a new combination of the information. In this way, technology intermediary and the industry-university-research can get information support commonly, and provide new resources superiority and organization form for the transformation of scientific and technological achievements. All these can ensure the effective combination of technology, talents, information industry-university-research cooperation need.

### 5.4 *Develop financial institutions' support ability*

The financial institutions should provide funding support for enterprises, universities and scientific research institutions under the guidance of government policy including provide long-term

policy loans, provide venture capital to risk enterprises and financial support. They should broaden and deepen the various financing channels and make it to form a diversified, multi-channel and high efficiency financing guarantee system. At the same time, banks and other financial sectors should also give full play to its own financing advantage to innovative their financial products suitable for industry-university-research. They should tailored to develop a suitable financial products for industry-university-research cooperation project according specific needs and characteristics of the projects and create conditions for solving the lack of funding and financing difficulties. They should establish and improve the financial institutions for research and development project market assessment mechanism at different stages, and then establish linkage mechanism with enterprises, users and the government.

### 5.5 Construction of benefit risk protect system

The premise condition of industry-university-research strategic alliance is benefit sharing and risk-sharing, so the government reasonably protect union the interests of the parties has become the important conditions. First of all, the government should perfect the intellectual property rights protection system, and provide legal basis for the division of ownership and the use of intellectual property rights in industry-university-research strategic cooperation. He should improve the supervision mechanism taking the market as the means and establish a scientific, effective and specific benefit allocation mechanism, and make the mechanism be carried out strictly. The second, the government needs to strengthen the risk assessment and regulation of the money, talent and technology input by all parties to give full play to the function of incentives and income distribution of industry-university-research cooperation its own, and assist to establish participants shared interests and risk-sharing mechanism, and activate the intrinsic motivation in all parties, and regulating the cooperation risk, and so security the cooperation has sustainability.

## 6 ACKNOWLEDGEMENTS

This work was supported by 2014 soft science fund program from hebei science & technology department: “study on service innovation dynamics and process control mechanism based on performance” (134576198D); 2014 university Humanities and Social Sciences youth fund program from Hebei education department “study on government function optimization of Hebei regional innovation system” (SQ141009)

## REFERENCES

- [1] Chen, J Yang, Y.J. 2012. The theoretical basis and connotation of the collaborative innovation. *Science research* 15:161-164.
- [2] Xi, Z.Y. Li, X.ZH Chi, K.X. 2012. Construction of government-industry-university-research technology coordination innovation mode with financial. *Scientific and technological progress and countermeasures* 29(22), 19-25.
- [3] Wu, Y Chen, T. 2011. Research on policy incentives in industry-university-research cooperation innovation. *Scientific and technological progress and countermeasures*, 28(9), 109-111.
- [4] OECD. 1997. National innovation system.
- [5] SENKER, A. 1998. Rationale for partnerships: building national innovation systems. *STI Review* 23:127-136.
- [6] Wang, Ch. J. 2005. University-Industry-Government triple helix research. *China science and technology forum* 1:34-39.
- [7] Li, X.F. Wang, Sh.Sh. Jin, L. Wang, F. 2012. Research of collaborative innovation model of science and technology intermediary service institutions and collaborative way-based on the case of Tianjin. *Scientific management research*, 30(6): 45-48.
- [8] Yuan, Y.J. Tian, Y. Sun, J. 2012. Science and technology intermediary embedded mode research of Industry-University-Research technology alliance. *Science and technology and management* 14(4), 20-22.
- [9] Yan, L. 2010. Building interactive platform between university and enterprises, efforts to promote the development of government-industry-university-research. *Journal of nanjing university of aeronautics and astronautics* 12(1), 93-96.
- [10] Man, H.Y. Chen, M. 2011. Theory of the government in the role of "industry-university-research-Financial-Technology intermediary" strategic alliance and efficacy. *Science and technology management research* 11: 20-26.