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Research Institutions and SMEs: Trust Mechanism and Partnership

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Introduction

Small- and medium-sized enterprises (SMEs) have been playing an important role in the development of China's national economy in the 21st century. A survey sponsored by Volkswagen Foundation, Germany revealed that in 2002, value of products and services provided by Chinese SMEs accounted for 50.5% of the national GDP. The SMEs also created 75% of the jobs, and contributed 60% of China's exports and 43.2% of taxes. Development of SMEs has become a hot topic in China, receiving attention from all walks of society.

It has been widely accepted that the establishment and growth of SMEs are based on innovations. However, it is very difficult to trace the dynamic process of innovating activities in SMEs, not only because of the diversified forms of SMEs, but also because of the dynamical feature of innovations resulting from the efficient interaction between SMEs and external environment. Anyway, both researchers and practitioners have done detailed researches on innovations in SMEs. In micro level, they have tried to find out the principles and results of innovation in SMEs from directions of entrepreneurship, resources, information and knowledge. In macro level, they have tried to identify and create operational environment suitable for innovations of SMEs in a country or a region.

Undoubtedly, management experts are mainly interested in anatomizing SMEs. Discussions on what kind of operational environment is more favourable to SMEs, however, have attracted more attention from researchers in different subjects, including management, economics and sociology. More and more scholars are advocating the establishment of regional innovation system to support innovation and growth of SMEs. Although they have had enough discussions on the concept, characteristics and features of such a system, they have not yet conducted enough research on deep-seated factors between regional innovation system and growth of SMEs. For example, how the regional innovation system can be established? How and in what way such a system can spur innovation of SMEs? How to define the scope of a regional innovation system? What are the differences in innovation modes and efficiency in SMEs inside and outside the system? To answer the questions, National Research Center for Science and Technology (NRCSTD) in Beijing, China, and Fafo Institute for Applied International Studies (Fafo) in Oslo, Norway started an international cooperated research project named "A Study on the Institutional and Technological Innovation of Small and Medium-sized Enterprises in Western China". The project is financed by a grant from the Norwegian Agency for Development Cooperation (NORAD) under the project number

CHN-2086. The project, through on-the-spot investigations in Chengdu, Sichuan Province, and Xining, Qinghai Province, aims to discover the operational situation and shortcomings of the regional innovation system in western China. It is also designed to discover the modes and features of SMEs' innovation inside the system, find out reasons behind the weak innovation ability and poor performance of SMEs in western China, and explore ways to help them improve their innovation ability. Interaction between research institutions and SMEs innovation is a key part in the functioning of regional innovation system. This paper, based on the results of the first round of investigation and case studies, aims to discuss the features and principles of such interactions from the angle of trust mechanism. We also try to find out problems in such interactions and seek for solutions and suggestions to the problems.

Background and problems

Etzkowitz and Leydesdorff (1998) proposed that in a free economy, innovation contributors included governments, enterprises and research institutions. Although they had different targets, standards and restrictions, they were increasingly penetrating into each other to form the so-called "trilateral network and hybrid organization" relationship. They believed that a more mature relationship among the three helix, the stronger innovation ability in a country or a region. In China, after more than two decades of reform and opening, the government doesn't interfere in resources distribution through administrative orders. Instead, it is controlling the economic operation through macro measures. Research institutions and enterprises have become independent bodies to engage in market activities, which of course include their innovation activities. That means the "trilateral network and hybrid organization" has taken shape in China, and undoubtedly, in such a framework, research organizations are playing an active role in propelling innovations in SMEs. They provide knowledge, technology and information support to SMEs. Such a role is also demonstrated by close interaction and co-operation between research institutions and SMEs.

The essence of cooperation between research bodies and SMEs is trust. For one thing, the cooperation between enterprise and research institutes is characterized by a high information asymmetry and uncertainty. As a result, the trust between them became the indispensable base for their successful cooperation. For another, such cooperation are often linked by personal relationship rather than organizational relationship. In the inauguration and initial periods of SMEs, entrepreneurs often have absolute controlling right on the enterprises, while in the meantime they are also the main persons to represent the enterprises to conduct external co-operation. All the relations linking SMEs and outside world are developed by entrepreneurs. In other words, personal trust between entrepreneurs and outside world is the key for SMEs to obtain resources such as financing, technology and human resources. For SMEs that are in fast growth period and have already standardized their management to a certain degree, it remains to be hard for them to interact with the outside world through organizational exchange (such as through departments in enterprises) as large enterprises do. They also rely on entrepreneurs to explore new relations to expand their interaction with outside world further.

However, in a transitional society, such interaction and co-operation on the one hand must get rid of the influence of planned economy while on the other hand need to seek for new modes compatible with market economy operation. That means trust mechanism in co-operation between research institutions and SMEs must be transformed, too. This study believes that trust mechanism

is the deciding factor for efficiency of co-operation between research organizations and SMEs. We aim to theoretically explore principles in the transformation of trust mechanism in co-operation between research bodies and SMEs in the transitional period and demonstrate such principles through case studies. We also try to seek for relevant policy suggestions to improve co-operation efficiency for research institutions and SMEs, push forward innovation of SMEs and improve growth environment for them.

Trust structure in Chinese society in the transitional period

Luhmann (1979) has distinguished two kinds of trust: personal trust and institutional trust. He noted that personal trust was established on the base of degree of familiarity and emotional links between people while institutional trust was external, using punitive or preventive mechanism such as laws to reduce the complexity of social exchange. Scholars such as Yamagishi (1994) further elaborated that personal trust was a kind of safeguarding trust which existed in personal relations, while institutional trust was a basic trust which was based on people's trust on social mechanism. He argued that the two kinds of trust formed the trust structure in the society. Therefore, the transition in China's social system is sure to bring about transformation of institutional trust from one form to another. In the transformation, personal trust fills the space left by absence of institutional trust and becomes the major part of the trust mechanism in Chinese society. In the meantime, the interaction between personal trust and the forming institutional trust can result in an extremely complicated trust structure in Chinese society. Such a structure in turn affects co-operation between research institutions and SMEs, making the co-operation a dynamic one yielding different impacts on innovation and growth of SMEs in different periods.

1 Special personal trust in China

Studies show that personal trust is to some degree affected by culture. Some scholars even described trust as a kind of cultural phenomenon, suggesting that trust was part of a society's culture codes passing generation by generation in some ways. For example, Fukuyama (1998:34) believed that trust came from "inherited ethnical customs" and was a product of moral standards shared by the society. That means trusts in different cultures are different and the unique Chinese culture produces a special personal trust in the Chinese society.

In earlier studies, many western scholars believed that there was only low-degree or limited trust in Chinese society. Weber(1920), in his research on Chinese religions, noted that the people in Confucian culture stressed on "self-restraint," and didn't trust others, which seriously hindered development of China's credit and commercial activities. He argued that trust of Chinese people was established not on the base of common belief community, but on kin community, or on family relationship and quasi-relative relationship. Such a specialized trust is hard to be generalized. Fukuyama believed that in countries such as China, Italy and France, all social organizations were based on kin-linked families. People in such societies lacked trust to people outside their families. In such societies without general trust, it was very difficult to standardize company operations. Family enterprises owned by Chinese would not allow professional managers to manage their companies. They would rather split the company into several new ones or even disintegrate them completely (Fukuyama, 1998:296). Although Chinese American scholar Redding didn't believe Chinese did not trust any other people absolutely, he did point out that there were only limited trust

among Chinese people and such trust were mainly on individual level. Chinese people trust family members absolutely, but their trust to friends or acquaintance could only be established when they set up a kind of mutual-dependent relationship. (Redding, 1993:85-86)

However, recent studies, especially investigations made by domestic scholars, revealed that the trust level among Chinese people was not as low as scholars estimated earlier. For example, an investigation conducted by Zhang Jianxin et al. (1993) showed that Chinese university students trusted acquaintances and strangers more than their US counterparts did. Peng Siqing (1999) also challenged the opinion that Chinese people lacked trust. He proposed two kinds of "distrust to outsiders." The first one was people did not trust others because they didn't have deep understanding about them. The second one took place even if people had full understanding to outsiders, they still did not trust them. Logically, only the second kind of disbelief could result in a low-trust-degree society. It was reasonable not to trust people who you were not very familiar with and it also happened in Western countries. In other words, the first kind of disbelief can turn to be trust through interactions.

It can be noted that the debates on trust in Chinese society was focused not on the level of trust, but on the special essence of trust in Chinese society. Just like what Weber said, the great contribution made by ethnic and abstinence churches in Protestantism was casting off kin links and building up advantages of belief-based communities over kin-based communities, including families. A popular view is that trust is a kind of expectation on what actions individuals may take to others. If an individual expected another people to take possible actions beneficial or at least not harmful to him/her, s/he would trust that people (e.g. Oliver E. Williamson, 2001). China is a society that attaches great importance to relations, and to establishing and maintaining relations network. People have their own relation networks and relations to a large extent determined trust expectation of individuals.

However, the interacting Confucian culture and agriculture culture in China set up the relation order in the country. Behind the relation networks are the differences in people's trust to outsiders. Family members linked by kin enjoy "starting-point trust", which means individuals have born trust to family members although the level of such trust may change with time and frequency of interactions. Undoubtedly, such trust is based on emotional recognition and helps Chinese family enterprises to achieve efficient operation in their initial periods. Some scholars (Chu, 2003) defined it as family trust. However, Chinese people can also gradually develop relations with people outside their families, such as town mates, colleagues and classmates, into relations similar to that of family members. More people can be included in their trust lists. Such trust comes from good expectation developed after long-term exchange of the two sides and their similar background, which means similar behavior customs. It is easier for people with same background to get mutual understanding and reach consensus in exchange. Chu Xiaoping (2003) defined such trust as pan-family trust.

2 China's forming institutional trust

Under the planned economy, government was the monopolized distributor of social resources and controlled the social and economic development. Administrative orders were major tools in economic co-operation, and thus became scarce resources in the society. It was easier for individuals and organizations with administrative orders to gain trust from others and get co-operation opportunities with other institutions. In other words, institutional trust in planned

economy era was a kind of trust based on administrative orders. Since China initiated the reform and construction of market economy in 1980s, the government has gradually stopped interfering in economic development directly. Market principles have replaced administrative orders to play leading role in economic development while laws and systems have become rules guiding people's daily life, as well as personal trust. A kind of trust suitable for market economy has gradually taken shape. Such a trust system is based on individual's recognition to social system and laws. Individuals believes that laws and systems can ensure that he or she may not suffer losses if other people can not keep their words, which happens very often in transactions, especially in first transactions between the two sides. Contracts become the bridge linking co-operation partners. However, in the process when old institutional trust is gradually fading out while the new one is in the formation, personal trust becomes the main body in social trust structure as people attach more importance to personal relationship rather than laws. In this period, family trust, pan-family trust and institutional trust construct the spindle-shaped trust structure in China, as shown in chart 1. On the left end is family trust under which people are more emotional than rational. Pan-family trust in the middle is the main part in the personal trust in Chinese society. What on the right end is the forming institutional trust under which people are more rational than emotional. See chart 1.

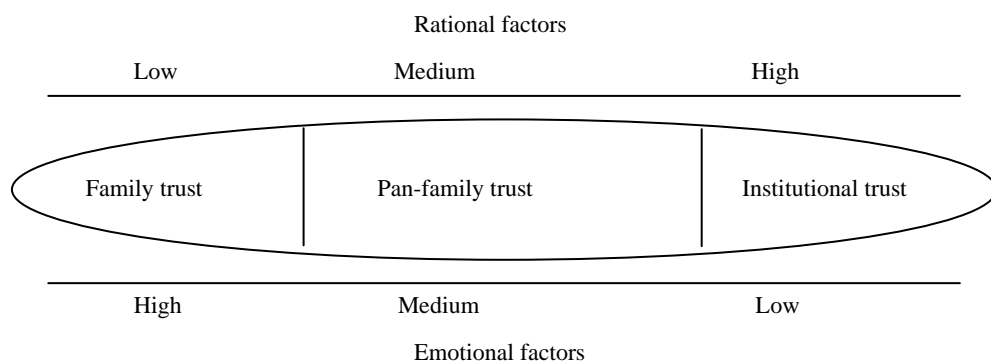


Chart 1 Trust structure in Chinese society

The trust structure in China, which is dominated by pan-family trust and short of institutional trust, has resulted in some dilemmas. On the one hand, although pan-family trust stresses both emotional and rational contacts, the rational fact, however, is often covered in some emotional exchanges. In other words, although people are very serious on some issues but often they do not speak out, taking into consideration of maintaining relations with their partners. In the meantime, it takes a relatively long time to establish pan-family trust, which to some extent restrains companies from harvesting gains through expanding personal relation networks. In Italy, however, SMEs have gradually got rid of the impact of individual personal relations. Instead, an enterprise network has been established providing co-sharing resources, information and knowledge to the companies. Such a network is an important contributor to the advantages of Italian products. In China, although there are regional SME clusters, the SMEs still rely on personal relations and their co-operation is still based on family and pan-family trust, which leads to a high transactional cost to maintain these relationship. Efficiency of such co-operation is relatively low due to a lack of punitive mechanism after some people break their words. Meanwhile, it is also expensive to maintain such trust.

During the transitional period, China's special trust structure has been transferred into

relation-based activity standards, which are reflected in all aspects of social life. However, such a structure is in contradiction with legalization demand aroused by market economic operation. A typical example is the limited scale of enterprises owned by Chinese families. Meanwhile, such structure also determines the modes and features of interaction between research institutions and SMEs, and demonstrates the internal demand for a transformation in trust structure and its formation mechanism in China's transitional period.

3 Transformation of trust mechanism between research institutions and SMEs

In planned economy era, administrative distribution of resources was the decisive factor in development of SMEs, especially collectively-owned SMEs. They enjoyed low charge or even free technical support from State-owned enterprises (SOEs) and research institutions. Overall, such distribution mode made the interaction between SMEs and research institutions a linear stable one, with administrative orders from the government bridging the two. However, personal relations of SME managers, based on family trust or pan-family trust, still played a key role for SMEs to obtain administrative orders, which were scarce resources then. What enabled the firms to get the orders were good personal relations between their managers and government officials, SOE managers and staff in the research institutions. Therefore, on the surface, co-operation between SMEs and research institutions depended on administrative order-based institutional trust, but in fact, it was personal relations based on family or pan-family trust that helped the companies obtain the administrative orders.

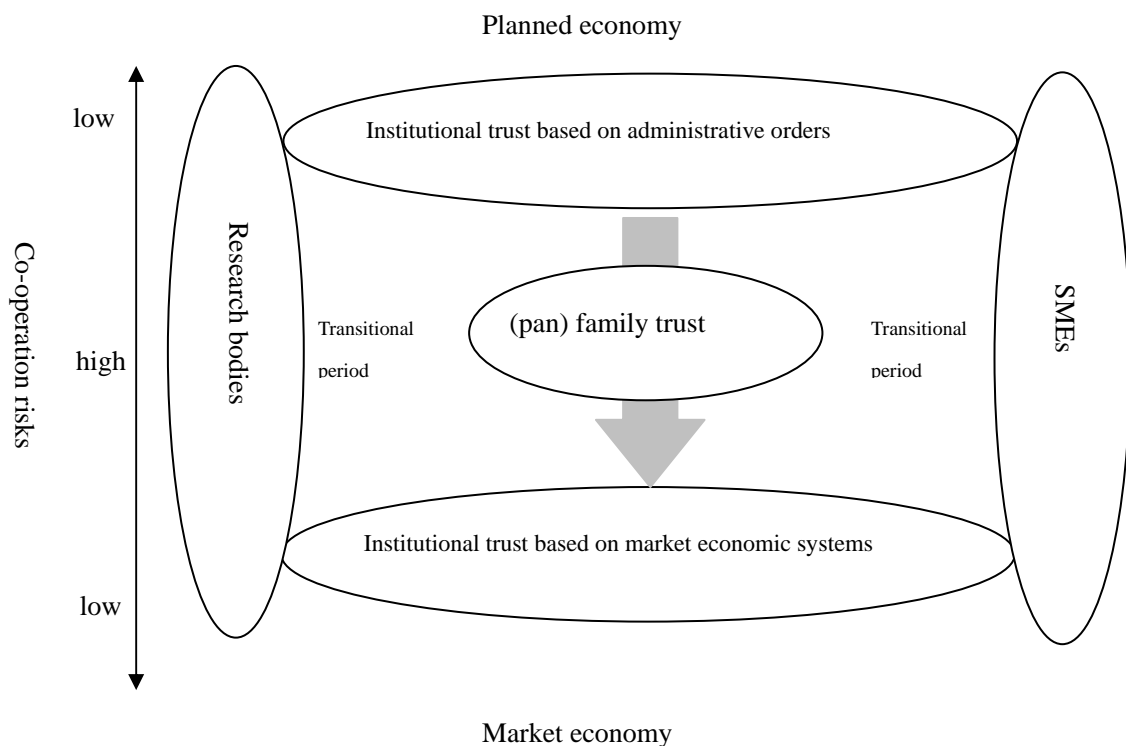


Chart 2 Transformation of trust mechanism between research bodies and SMEs in transitional period

The Chinese society has been in transition since 1980s. With the establishment of market economic systems, SMEs began to look for more technical support from research institutions in the market. But capital shortage made it hard for them to buy needed information and technologies. Under such circumstances, co-operations based on entrepreneurs' personal relations network has become the major co-operation form, under which research bodies and SMEs join hands and are responsible for the results of the co-operation. As China's legal system remains to be improved, research institutions are more likely to select familiar entrepreneurs as partners in a bid to reduce risks. In such co-operation, pan-family trust acts a good foundation, but it also leads to imbalanced development among Chinese SMEs. Those enterprises with closer relations with research institutions can easily get technical support, while for those without such relations, it is very hard for them to achieve technological breakthrough. However, with improvement of China's legal system, a new institutional trust based on market economic system has been introduced into co-operation between SMEs and research institutions. In this period, such co-operation is built on pan-family trust but institutional trust has been applied in the co-operation since both sides seek for legal protection and more trust through contracts. Since such institutional trust has not yet been established fully, sometimes the aim of people signing contracts is to maintain pan-family trust and to define personal relations. Some contracts are just a kind of memorandums of understanding, rather than legal documents. Sometimes the contracts are not very effective (Cheng & Rosett, 1991).

In the transitional period, changes have taken place in the trust mechanism between SMEs and research institutions, making it more complicated. As shown by chart 2, in the transition from planned economy to market economy, the base for institutional trust between SMEs and research bodies has also been in transition from administrative orders to market economy legal systems. In the meantime, the re-building of institutional trust can sometimes lead to lack of institutional trust, which makes the co-operation between SMEs and research institutions very risky in the transitional period. Under planned economy system, both enterprises and research bodies didn't have to pay for failure of co-operation while in an ideal market economy, perfect legal system can stop both sides from breaking down their words. All these make family and pan-family trust to play a significant role in the co-operation because such trust helps to ward off risks brought about by imperfect institutional trust system. To some degree, both SMEs and research institutions are walking on ropes when seeking co-operation.

Investigation design and means

Most of studies on regional innovation system were based on second-hand statistics with few of them conducting on-the-spot investigations. In fact, regional innovation system is a complicated system. Although statistics can verify operational results of the system, figures can't tell deep-seated problems in the operation. Grounded theory is an efficient way when making analysis on complicated issues. Therefore, the project selected grounded theory as its research means and got first hand materials through on-the-spot investigation. The project was designed according to following principles:

- (1) We selected Chengdu in Sichuan Province and Xining in Qinghai Province as the two places where the investigation was made because the two cities could represent developed areas and under-developed areas in western China respectively. We could compare the

cities with each other.

- (2) We selected more than 10 SMEs respectively in the two cities as our interviewees. The SMEs were in different industries and sub-sectors and were established in different times. To each of the enterprise, we conducted at least twice in-depth interviews. The samples could also be classified into two categories: one included well-performing firms in their lines in local cities while the other were poor-performers.
- (3) We plan to conduct a second round of interview to all the sample enterprises one year later.
- (4) We also interviewed local authorities, intermediaries, and bank staffs responsible for granting loans to SMEs.

When doing the interview, we focused on all the innovation steps taken by the firms since their establishment and tried to make the background, process and results of the steps as clear as possible. We tried to dig out factors influencing SME innovations. Undoubtedly, such factors include both internal factors and an innovation support system in which the SMEs interact with outside organizations such as government, research institutions and banks. The project team conducted the first round of investigation in Chengdu and Xining respectively in October, 2004 and April, 2005. We interviewed 13 and 14 SMEs in the two cities respectively. Firms in the two cities are in different industries. In Chengdu where economy is relatively developed, the firms are in diversified industries including service, processing of agricultural products, forage processing, medicine and medical equipment, designing of chemical equipment, electric appliances, auto parts manufacturing, furniture and software development. In contrast, in Xining, there are limited industries. Among our interviewees, six are manufacturers of Tibet medicines while the others are in chemical, machinery and software development. Most of the interviewed enterprises were established in 1990s. Their sales income in 2003 ranged between 400,000 yuan to 2 billion yuan. The project team collected around 200 innovation events happened in the firms in the past over 20 years. The issues include inauguration of the firms, introduction of key talented persons, development of new products, shifting to new businesses and getting certificates. Of the events, around 30 were related to co-operation between the firms with research institutions. However, due to factors such as limited interview time and reluctance of interviewees, the project team got clear information on only 10 innovation events in five interviewed enterprises.

Case study and discussions

As we mentioned above, case studies are aimed to reflect the changes taken place in trust mechanism in co-operation between research institutions and SMEs, and to discover problems in practice. To this end, we had two standards in selecting our cases, one was that the enterprise should have completed the transformation of trust mechanism successfully while the other was that interview on the enterprise should contain enough information on its co-operation with research institutions. We conducted detailed analysis on 27 interviewed enterprises in Chengdu and Xining, and found one enterprise most suitable for the two standards. Therefore, we selected Company JT in Chengdu as our case.

1 A brief introduction to the case

Company JT was established in 1998 as a forage company producing premix for forage production. In 2002, it began to brew expansion to other industries and developed a business mode

of “company + base + farmer” in breeding of *Ma goat* (a special species of goat in Chengdu). In 2003, it joined hands with a Canadian Enterprise to establish the Chengdu JT Co Ltd.

The company was launched by Li Hui, a graduate from Sichuan Agricultural University. Her major was animal nutrition and breeding. After graduation, she joined Chendu Charoen Pokphand, the subsidiary of world leading forage producer Charoen Pokphand Group. One year later, she was sent to work in headquarters of the group in Thailand. Later she went back to Chengdu to work for the company as a technician. In 1995, she joined a privately-owned forage company and was appointed to be the chief technical officer. Spending three years in the private company, Li re-joined Chengdu Charoen Pokphand as a technician manager specialized in research and making directions for premix. In 1998 when she launched the Chengdu JT Co Ltd, she was dubbed as the employee queen in forage industry in Chengdu. The working experiences in the past years not only enriched her knowledge in the industry, but also helped accumulate personal relations network. For example, she developed good relations with many experts in Sichuan Agricultural University. They jointly conducted many research projects. These experts also encouraged her to resign from Charoen Pokphand and establish her own business.

Li's company posted fast expansion in business after establishment. In 1998, sales value of her company was 1 million yuan, which jumped to 5 million yuan in 2002 and 40 million yuan in 2003. Such a rapid growth was owed not only to customer resources built up in the past few years, but also to Li's unremitting innovation efforts. For example, Jintian Forage sought for innovation in sales through co-operation with research institutions: when selling products, the company also sponsored lectures to provide training on breeding process and techniques for potential customers. The company invited five doctorate mentors (who were experts in veterinary and nutrition in Sichuan Agricultural University) to give the lectures. Moreover, it delivered free materials to customers and even invited them to dinners.

With the rapid development of China's forage industry, profit margin of forage production declined sharply, from the 50 per cent in the initial period to 5 to 6 per cent at present. In 2002, the company realized that it could no longer rely on a sole industry and began to look for new developments. At first, it planned to build up a boar plant and Li conducted negotiations with owner of an abattoir. However, the negotiation failed to produce any results due to different management ideas of the two sides. Later, it shifted attention to *Ma goat* project. *Ma goat* is one of the seven varieties included in the State trait gene reserve. However, due to lack of specialized fostering and breeding base, the amphimixis among *Ma goat* has resulted in fading of *Ma goat* gene. It has become an urgent task to preserve the gene. Supported by experts, friends and government leaders, Li decided to enter this business. The company set up a training base for breeding breeder goats. It tries to improve breeder goat varieties through gene research, then provide the goats to farmers to produce more breeder goats and commodity goats. The company is responsible for buying back the goats. On the one hand it can conduct deep processing on goats while on the other hand it can sell live goats. That is the business mode of company+base+farmers.

Li's company has also established an animal gene research institute as its special research and development department. The institute was registered as a privately owned entity affiliated to the company. Li Hui is the legal person of the institute while researchers are mainly teachers and students of Sichuan Agricultural University. The company is responsible for making investment (including both financing and goats for experiment) while the institute can apply for projects to gain profits through gene research. But so far it has not yet got any funding from outside. In the

long-term, income of the institute will mainly come from selling gene. With gene breeding a long-term work, it is expected to take at least three to five years for the institute to start the gene business. JT and Sichuan Agricultural University have established good co-operation. At present, the goat breeding guiding group of the university also instructs work of the JT breeding center. Meanwhile, the company can make full use of the technology resources, equipment (for example, a gene test machine worth millions of yuan, but Li's company can borrow the equipment as long as the university has) and human resources in the university. In the meantime, students in the university can take JT as experimental base as JT provides funding for the students in gene test, sample collection, sample analysis, data analysis and anatomization.

Li Hui believes that ordinary breeding plant can not afford to provide breeding standards for goat breeding farmers and make assessment on improvement of *Ma goat* varieties while universities are also unable to do this because they don't have the big number of goats needed for the experiment. She was majored in this subject and loves to make investment in research. "I am different from other bosses, " she said. "I want to make the industry bigger and realize my own dream."

2 Case study

The article tries to study the case by using key event technology. Through analyzing factors behind key events, we try to find out the mode and feature of the co-operation between the company and research institutes, the role and function of trust mechanism and the changes of the trust mechanism. Refer to chart 3

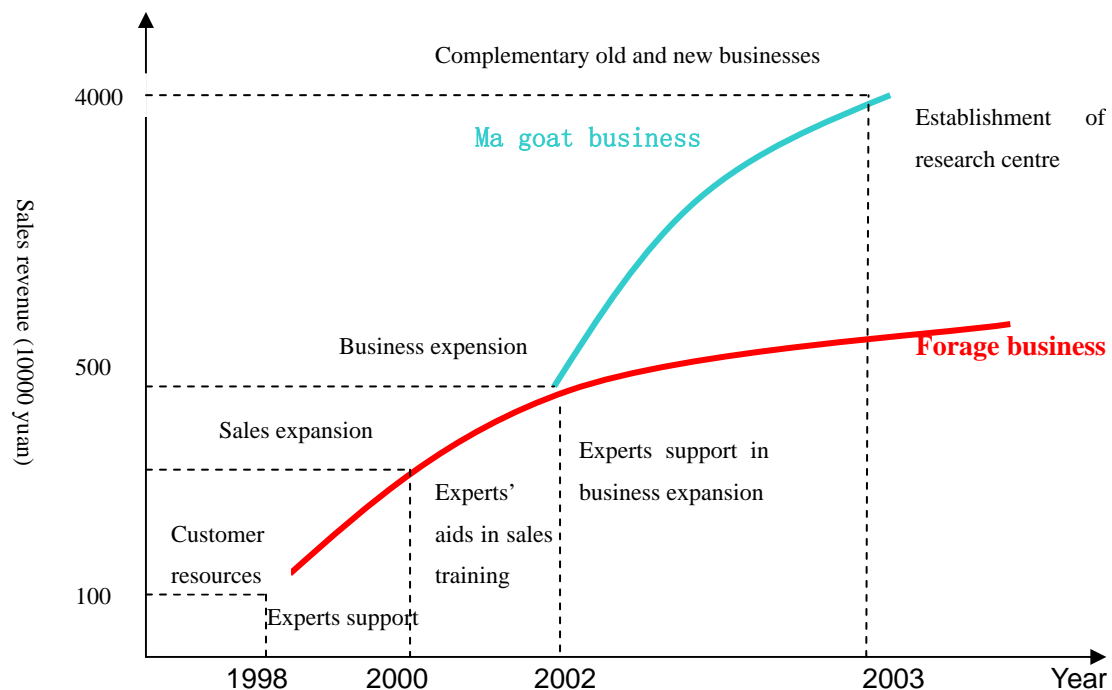


Chart 3 Key events in JT's development

The chart 3 shows that as graduate of Sichuan Agricultural University, Li developed

pan-family trust with experts of the university, which played a very crucial role in the growth of JT in the first few years. The experts to a large extent persuaded Li Hui to make the decision to start her own business. In the meantime, customer resources accumulated before she started her own business also enabled the company to find existing room shortly after it was launched. Later, the experts also provided great support in business expansion of JT. Confirmed support includes providing free training for farmers in JT's sales expansion. Actually there should have been more supports and we guess that experts might also provide help and instruction in producing technologies and techniques. The year 2002 was a turning point for JT. The declining profit ratio of forage industry forced Li to consider further expansion. In her decision-making process, opinions from experts were crucial in pushing Li to enter the *Ma goat* breeding business. In the meantime, the new business resulted in closer co-operation between Li and the university. The trust mechanism between them has transferred from Li's individually pan-family trust to a kind of institutional trust. The research center launched by the two sides was a result of such trust. Under the new mechanism, the co-operation between the two sides is closer, more target-oriented, and efficient. Their co-operation modes were more diversified, even including renting technology resources and equipment resources from the university at low prices. In the meantime, students in the university can take JT as experimental base as JT provides funding for the students in gene test, sample collection, sample analysis, data analysis and anatomization. Behind key developments of JT, there are changes of trust mechanism between Li Hui and a research institute (Sichuan Agricultural University). See chart 4.

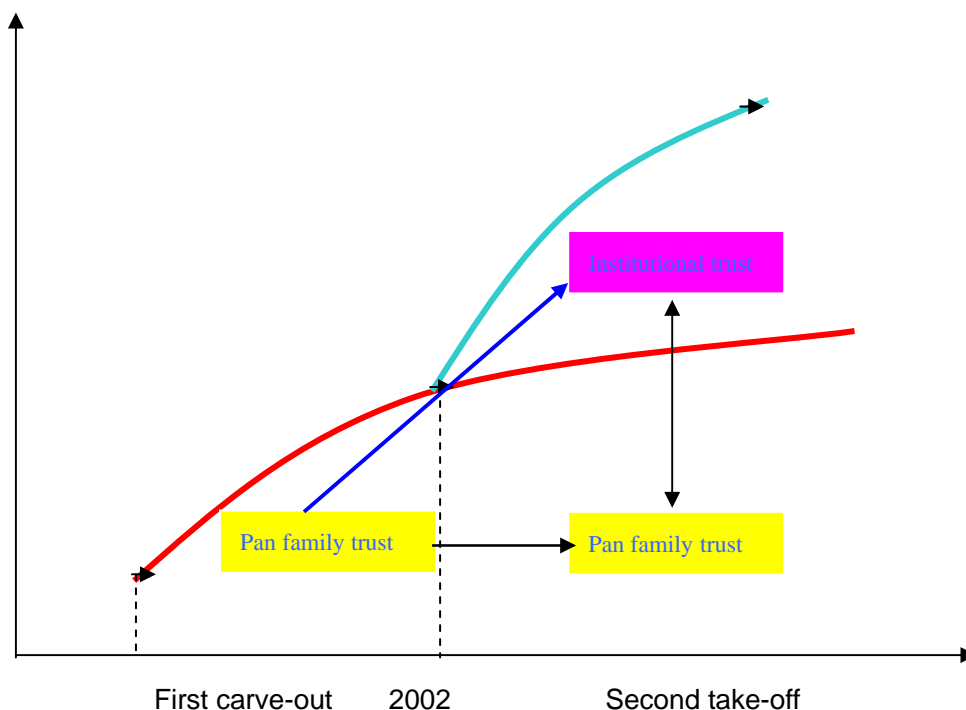


Chart 4 Transformation of trust mechanism in JT's development

As shown by the chart 4, if taking the year 2002 as a dividing line, JT finished the first carve-out before that. In this period, the partnership based on Li Hui's pan-family trust played a key role in

ensuring the business a success. Sichuan Agricultural University provided information and knowledge to JT in an informal way, which reduced JT's cost in obtaining necessary technology, management and information support by a large margin and accelerated JT's fast expansion in the first few years. After 2002, JT started the second take-off. Its pan-family trust was upgraded to a kind of institutional trust and continued to support JT's *Ma goat* breeding business. The two sides began to apply formal and diversified methods in co-operation and jointly set up a research institute. That is because informal support of information, technology and knowledge could hardly meet demands of JT's further development. It required the firm to further consolidate the resources in research institutions to serve its development. That is to say, the transformation of trust mechanism is a natural process and we could also tell that Li Hui played an active role in pushing forward the transformation.

Overall, JT, to some degree, represents a typical example in transformation of trust mechanism in co-operation between SMEs and research institutions. It also embodies the interaction mode between SMEs and outside organizations under market economic systems. Generally, the co-operation starts from pan-family trust. But with deepening of the co-operation and standardization of the enterprises, such co-operation based on pan-family trust is upgraded to co-operation based on an institutional trust. In this way, both sides pay enough attention to both rational trust and emotional trust, and to both efficiency and results of the co-operation. However, in reality, most of the SMEs can not accomplish the transformation by themselves, and the failure often leads to a series of crisis in the growth of the firms, such as trust crisis in management teams and frauds in co-operation with outside organizations. In our interviews in Xining, at least three entrepreneurs complained that their friends and acquaintances cheated them when buying their products, some defaulted and some refused to pay. This problem has become a severe blockage in development of SMEs. With growth of SMEs, transformation of trust mechanism is the key for SMEs to co-ordinate relations with outside organizations.

Conclusions and discussions

First, interaction between research organizations and SMEs is the crucial part in regional innovation system. Research institutions support development of SMEs through investment in technology, knowledge and information. In the meantime, SMEs' dynamic innovation activities can spur commercialization of achievements of research institutions. However, China's special trust structure results in complicated co-operation between SMEs and research organizations. Pan-family trust leads to lack of credit guarantee in the co-operation. In addition, the imbalanced distribution of pan-family relations in the society makes the co-operation unefficient. It is hard for some powerful SMEs to get support from research institutions because they don't have relations.

Second, laws and systems are basis for market economy, which requires the co-operation between SMEs and research organizations to be standardized and institutional. The pan-family trust based on personal relations of entrepreneurs must be transferred into institutional trust based on organizations, which helps not only push the SMEs to a fast growth track, but also enable SMEs to avoid disputes in interests distribution which often come along with their increasing profits. The institutional trust can also help the two sides avoid losses in case one of them break their words.

Third, entrepreneurs play key role in transformation of trust mechanism. For entrepreneurs, their biggest enemy is their successful experience in the past. Some entrepreneurs are addicted to

yielding brought about by pan-family trust to their firms in the initial stage, or even rely on such trust. This not only restrains the SMEs from further expanding their co-operation with research institutions, but also confines them from developing relations with other outside organizations.

Last, the government should improve legal and system environment. SMEs are a dynamic part in China's economic take-off. In the current information age, future of SMEs depends on technical renovation and compatible systematic innovation. China's traditional culture determines its special trust structure, which is not in line with market economy principles. It is an urgent task for the government to strengthen legislation, standardize market economic systems, popularize laws and regulations, and push entrepreneurs to conduct institutional trust-based co-operation.

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