

Research on Tech SME Intellectual Property Innovation Mode

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Abstract

In recent years, the development of small-medium sized technological enterprises in China are facing unprecedented difficulties and challenges on industrial transformation and upgrading. It is strategically important to promote the business through different innovative models to obtain independent intellectual property rights effectively. This paper analyzed the intellectual property rights and independent innovation system. From the point of view on systematic theory, the author study on the driving forces of the independent innovation of SME in China, and analyzed the influence factors and selection principle of mode selection of independent innovation of SME in China.

Key words: Driving Force; Influence Factors; Principle of Selection

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INTRODUCTION

Since the reform and opening up, our country has been walking in development pattern of high energy-consuming, high pollution and high loss resources. According to statistics, China's enterprises designated size, working in science and technology, research and development activities which is only to account for 25% of all the enterprises and accounts for 0.56% of enterprise sales revenue; Only three over ten thousand of the

enterprises have independent intellectual property rights, and for lack of it they are at low industrial chain for a long time, highly depend on extern, resulting in small-medium sized domestic enterprises' weak risk resistance capability and short life cycle (Ministry of Science and Technology, 2009) (DONG, 2009). In 2008, premier Wen Jiabao carried out deep survey on small-medium sized enterprises in Guangzhou and found that all those having independent intellectual property rights can survive in financial crisis, on the contrary, those labor intensive and lacking of independent intellectual property rights enterprises are hard to survive, even mostly have been eliminated.

In order to meet the needs of building an innovation-oriented country, and speeding up industrial transformation and upgrading of the small-medium-sized enterprises. In 2008 it is general objective that to build China into higher level state in intellectual property creation, utilization, protection and management by 2020, proposed by the National Intellectual Property Strategy Outline. Based on this background, according to the existing literature, its key research is looking for better innovation mode to help small-medium sized enterprises to improve the ability in independent intellectual property rights.

1. THE RELATIONSHIP BETWEEN THE INTELLECTUAL PROPERTY RIGHTS AND THE INDEPENDENT INNOVATION

Intellectual property rights can be acquired through ways of independent innovation, entrusting foreign institutions, intellectual property licensing, mergers and acquisitions of other enterprises, cross permission, replacement of assets and etc. The independent innovation is the main way to acquire intellectual property rights which includes acquiring through original innovation, introduced innovation and cooperative innovation (GUO, 2005). Independent innovation is the innovative activity through

self-progress, integration of innovation resources, grasping the core technology, acquiring independent intellectual property rights and improving the innovation ability. Enterprises have power for independent innovation to gain

intellectual property rights, because they can obtain more profits in the market due to innovation achievement under the law and form access barriers to share a bigger market.

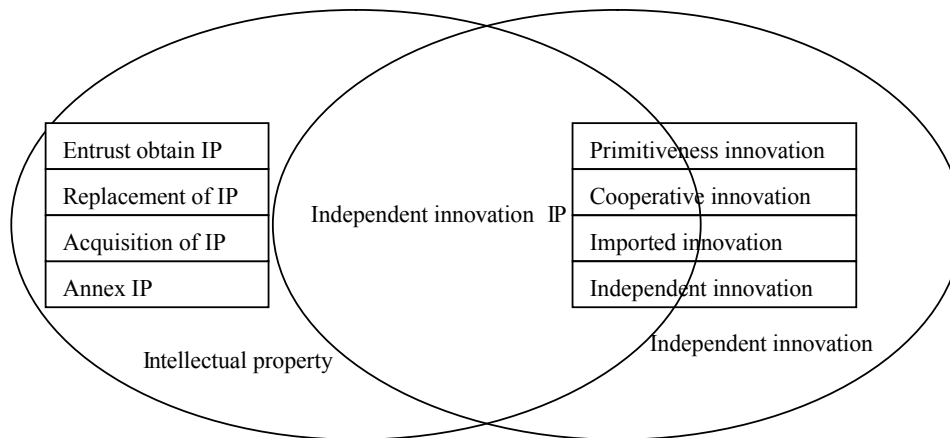


Figure 1
Relationship Between Independent Innovation and Intellectual Property Rights

As shown in figure 1, intellectual property rights and the independent innovation are closely related, but also have obvious difference. The way of obtaining rights is mainly through independent innovation, which further property forms to knowledge property, effectively protect the independent innovation achievements and whole process of innovation, not only reflected in the early days devotion, but also in innovation income distribution. The possession of knowledge property right makes independent innovation to have autonomy and the real meaning. The difference is that not all is formed by independent innovation, which is not all can form of intellectual property rights, and only those protected clearly by law can gain intellectual property rights such as: inventions, utility models.

perceive and grasp impetus correctly.

The basic driving force of small-medium sized enterprises' independent innovation has two aspects: the external driving force and internal driving force, which contains different elements and produces different influence to the innovation activities.

2. DRIVING FORCE OF INDEPENDENT INNOVATION RESEARCH OF SMALL-MEDIUM SIZED ENTERPRISES' INTELLECTUAL PROPERTY RIGHTS

If we want to study mall-medium sized technological enterprises' independent innovation pattern, we should firstly analyze the driving force of technology-based SMEs' in reality, which is the foundation of their innovation and also the important factor of the innovation process. The basic impetus is not only the base of independent innovation, but also a crucial factor which determines the process of independent innovation, and the combination of all the impetus is the environment of systematic independent innovation. Therefore, if we want to research innovation model of intellectual property in small-medium sized technological enterprises, we must

2.1 External Driving Force

2.1.1 The Development of Science and Technology

From the history of enterprise, it is known that the development and growth of each enterprise is closely linked to the technological level at that moment and small-medium sized enterprises are in a certain technology development phase, The development of science and technology is the driving force to promote the enterprises' independent innovation, and though which intellectual property rights gained makes science and technology from theory to the market.

2.1.2 The Market Demand and Competition

The existence of the enterprises is to meet the demand of the market; only in this way can enterprises develop in the competition. The market leads enterprises to produce what kind of products, and the enterprises must strengthen the independent innovation ability to obtain knowledge property, inevitably applying some technology to produce such kind of product. This can avoid similar products, not washing out unfortunately by the market due to lack of core competitiveness.

2.1.3 The Government's Policy Incentives

The market spontaneous adjustment mechanism cannot play a role all the time, for example, in some places, there will be the failure of market mechanism. Once appear, the government's policy is the driving force to promote the enterprises' independent innovation of intellectual

property. The government inspire small-medium sized enterprises' enthusiasm of independent innovation of the intellectual property rights by a series of , such as tax preferential, strengthening financial support, legislation to strengthen punishment of infringe upon the intellectual property rights and so on.

2.2 Internal Driving Force

2.2.1 Enterprise Culture

"The corporate culture is the integration of values of the organization, the sense of community, work style, code of conduct and way of thinking which are developed by the business organization in their long-term practice activities and generally recognized and followed by organization members"(YANG, 2004). So we can see that the corporate culture affects the enterprise development, and people are more important in the culture. The value of enterprise culture is represented by the value of employees since they are the ones whose performance influence the innovation progress of organization and who are highly relied on by the organization. The culture of innovation activities of tech SMEs is the soul of independent innovation activities, which supports the entire enterprise, and becomes the "soft power" of which. The culture of innovation promotes and guides the enterprises for its innovation practice, also protects its intellectual property as well; the other way around, innovation activities and intellectual properties coming along with have positive effects in the development of innovation culture.

2.2.2 The Entrepreneur Innovation Spirit

The entrepreneurs, who found the tech SMEs with innovation spirit and make the economy progress as a result, are native innovators. Hence entrepreneurs and innovation are naturally bonded. Entrepreneurs are the founders, leaders and directors of their corporations, and initiators, organizers and decision makers of innovation activities. Therefore, entrepreneurs' innovation spirit and such importance degree which they attached to is the key point of whether success or not of obtaining intellectual property.

2.2.3 Strategy and Management

Strategy of tech SME is one's long-run development plan. The enterprise chooses its developing direction for continuous development based on internal and external environment. Management is another internal driver beside strategy. Management supports innovation culture of the enterprise. Innovation activities benefit from stronger recognition of employees to the company's strategy and culture which could be enhanced by constantly innovating and developing management.

As aforementioned, innovation spirit of SMEs only exists due to internal and external drivers. With internationalizing and systematization of the independent innovation activities to obtain intellectual property by tech SMEs, the internal driving force is more important than the external driving force. High-tech SMEs according to

their own characteristics, select the appropriate driving force for development.

3 THE MODEL OF INTELLECTUAL PROPERTY INNOVATION FOR SMES

3.1 Influential Factors to the Model of Intellectual Property Innovation for SMEs

The main factors affect the intellectual property of independent innovation of SME activities can be divided into two broad categories as external factors and internal factors. External factors include the enterprise market environment, government policy, protection of intellectual property rights; and internal factors include internal resources, stage of corporate growth, corporate R & D and manufacturing capabilities. This paper argues that the analysis of the intellectual property rights of independent innovation mode by following aspects

3.1.1 External Factors

- Academic ability of the national innovation system.

OECD configuration knowledge force is the capacity of the national innovation system to provide timely innovators channels so that knowledge reserves (FU, 1992). National innovation systems of the knowledge configuration include enterprises, universities, research institutions with the knowledge, the configuration of knowledge between suppliers and buyers, consolidate knowledge configuration. The National Knowledge Configuration force the higher, the more it can reduce the risk of enterprise independent innovation for intellectual property, the more it can reduce the waste of resources of social knowledge. Obtaining intellectual property of the original innovation requires the highest configuration force on the national knowledge, countries with high knowledge configuration force to promote original innovation obtaining intellectual property; countries with low knowledge configuration force suppression original innovation of enterprises obtaining intellectual property. In contrast, the state configuration force other two innovative modes no influence on the original innovation.

- The level of government support.

Government support from three general aspects as human, financial, and material support, where People refers to the capability of independent innovation talent and enterprise management personnel, the government through increased investment in education or training, incubators and other forms of transport for enterprise foundation innovative talent; Financial refers to the government through tax cuts, direct funding, government loans, and perfect the system of intellectual property as security for guarantees obtaining intellectual property to support independent innovation of SME; Material refers to that the government provide in-kind support for the technological SMEs, such as land purchase

and commercialization of products of independent innovation of SME access to intellectual property through government procurement. Government can be drawn through the comprehensive evaluation of these three independent innovation supports, and analyze the impact of government support under different independent innovation mode to obtain intellectual property.

- Legislation for intellectual property.

Intellectual property rights are protection for new independent innovation achievements in legal, of which patent is a form of intellectual property, and intellectual property right is protection mainly towards invention patents. Legislation to protect intellectual property rights include not only the national intellectual property laws, the degree of perfection of the relevant policies and regulations, including the efforts of law enforcement, to enable that suitable laws can be applied, as well as be strictly enforced. When the state is carrying high IPR protection, enterprises will be able to effectively protect barriers formed by proprietary intellectual property rights, and derive economic benefits and reduce the risk of embezzlement by other enterprises, making tech SMEs willing to risk the original innovative models to

obtain intellectual property rights. When the state carries relatively weak IPR protection, then the independent intellectual property rights of the science and technology based enterprises will easily be embezzled by other corporate, science and technology based enterprises would greatly reduce the economic benefits from the independent intellectual property rights, then tech SMEs will select introducing innovative obtaining intellectual property which has little risk.

3.1.2 Internal Factors

- Heterogeneity about internal resource of the enterprise.

Internal resources of small-medium technology-based Enterprises may also influence the enterprises to gain independent innovation pattern of the knowledge property right, such as quality of human resources, the research and development input, research and development ability of management technology, etc. Internal resources difference restricts each enterprise to choose different independent innovation pattern for intellectual property rights. The requirements of the original innovation, the introduction of innovation and cooperative innovation to the internal resources are shown below:

Table 1
Requirements for Independent Innovation Mode of Enterprises' Internal Resources

Comparison of content	Original innovation	Cooperative innovation	Introduction innovation
The enterprise internal R&D personnel	high	ordinary	low
The enterprise internal R&D investment	high	ordinary	low
R&D capability	strong	ordinary	weak
R&D management ability	strong	ordinary	weak

From Table 1, it is known that the original innovation mode has highest requirements to small-medium technology-based enterprises' internal resources, cooperative innovation models require the second lowest, and the introduction of innovative mode for minimum. When they have not strong independent innovation ability, can only choose to gain the intellectual property rights through the introduction of innovative mode; When they have improved the innovative ability, the enterprises tend to choose cooperative innovation mode to obtain the intellectual property rights, to win better competitiveness and obtain the initiative of intellectual property rights; And when they have strong innovation ability, they have greater power to choose original innovation model in order to obtain the intellectual property rights which under full control, better bring rapid commercialization of intellectual property, and form market barriers benefit by using intellectual property rights fast. It's not enough for enterprise to only have the independent innovation ability, and also have a very good management ability of enterprises' technology research and development. So if they have stronger management ability and R & D capability, it is more likely to choose the original innovation mode; the opposite will choose introduction

innovation mode which requires weaker ability of independent innovation.

Evolution of Small-medium Technology-based Enterprises' independent innovation ability.

Because they have different ability of independent innovation in different life cycle stage, innovation patterns also varies. According to the life cycle theory, it is known that they can be divided into primary period, growth period, mature period, decline phase, and they choose different innovation modes of knowledge property right in different periods. We will research Small-medium Technology-based Enterprises' modes to gain the intellectual property rights during the life cycle stage by using SPACE comprehensive analysis.

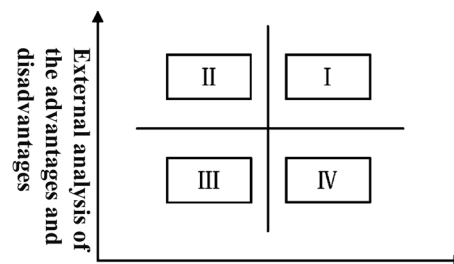


Figure 2
SPACE Model

The above is correlation analysis for enterprises in different stage of life to gain intellectual property of independent innovation pattern by SPACE method. Abscissa refers the proportion of their internal resources' advantages and defects. The closer to the right means that more apparent of the internal advantages, and the middle means the same advantages and defects. Ordinate refers the proportion of opportunities and threats in the external environment. The closer to the upward means bigger external opportunity, and intermediate position means the same level of external opportunities and threats.

In the figure above range II, it shows technology-based SMEs in primary period, when the enterprise does not have sufficient funds and good scale, enterprise's internal defect is greater than the advantages. In the outside, opportunities are bigger than external threats because there is little other enterprises to enter the field and it has not a strong competitor. At this stage, the ability of independent innovation is weak, so it has greater risk if fully rely on its own resources to obtain intellectual property rights from independent innovation. Because the enterprises entry to the industry is not much, it is difficult to seek cooperation; therefore they will choose the introduction of innovative model to obtain the knowledge property right in this phase.

The above figure range I indicate technology-based SMEs in the growth period, when they have some capital accumulation and a certain degree of increased independent innovation and technical management ability, their internal advantages appeared gradually. After the enterprise passes through a stage period of development, occupied some portion of the market share and obtained a certain economic benefits, gained awareness and popularity in the industry, then the external opportunity is greater than the threat. The enterprise internal have the ability of independent innovation, but still not very strong, and then the whole industry has other enterprises joining in and good cooperation is able to be achieved between enterprises, so enterprise generally applies cooperative innovation mode to have intellectual property rights.

In the above figure range IV, it refers technology-based SMEs in the mature period, when the enterprise gradually formed a certain scale, rich talent, had higher visibility and good enterprise image, making the enterprise financing more easy. At this time, the enterprises' internal advantages are bigger than disadvantages, and disadvantages part gradually reduces and disappears. In the external, more industry competitors make the market gradually in saturation state, and external threat is greater than the opportunity. If the enterprises wish to survive in the competition, they must have independent intellectual property rights to form core competitiveness. At this time they have strong ability of independent innovation, which enables to completely rely on their own originality innovation to obtain knowledge, and they are much easier

to cooperate with others or research institutions, so they can choose cooperative innovation mode or original innovation mode to obtain intellectual property rights.

The above figure range III represents technology-based SMEs in a recession stage, when their products have been behind of the demand of the consumers, so new products should be manufactured to capture market share. But the enterprises' external threat is greater than chance, and internal disadvantages is also greater than the advantages, the enterprise should choose introduction innovation model to obtain the intellectual property rights, reasonably make use of other competitive products of advantaged enterprises in order to prevent bankruptcy in a recession and prolong the life of the enterprise as far as possible.

Therefore, technology-based SMEs in different life cycle stage should choose appropriate innovation model to obtain the knowledge property right based on their own ability of independent innovation. Only when enterprise's life stage and the ability of independent innovation is adaptable to innovation mode, can they obtain the intellectual property rights and increase the core competitiveness of the enterprise. On the contrary, it will prevent acquisition of enterprise's intellectual property, affect the development of the enterprise, and hinder the formation of the core competence.

3.2 Technology-Based SMEs' Selection Principle of Independent Innovation Model to Obtain Intellectual Property

Small-medium sized enterprises should obey three main principles as follows when they acquire intellectual property through different innovation model.

Small-medium sized enterprise must conform to the enterprise strategic goals and must satisfy the business enterprise market demand when it gains intellectual property rights by independent innovation pattern. If the intellectual property of independent innovation mode is not consistent with enterprise's strategic target, it will affect the enterprise's management activities, and lead to fail the enterprise's strategic target.

- Matching principle of model and enterprise strategic

According to system theory, it is known that small-medium sized enterprise's strategy is integrated the internal resources and external environment, because in an open system. In order to seek development in the competition, the overall planning for the methods and ways of achieving is concentrated representation of the enterprise overall development goals. It is one of the most important elements for the enterprise's whole strategy, and also important means to realize enterprise's market strategic target.

- The principle of the core competitiveness

An enterprise's core competitiveness is the important indicator to distinguish from others and the key factor for survival and development in the market. If an enterprise wishes to keep long-term development in the market and

a dominant position to numerous competitions, it must improve its own core competitiveness.

Small-medium sized enterprise obtains intellectual property rights through the different independent innovation pattern to form a strong core competitiveness, which can benefit to keep advantage in the competition. The time small-medium sized enterprise to gain knowledge property rights when they choose different independent innovation pattern need regularly analyze that what is their own core competitiveness, select the independent innovation mode which strengthens core competitiveness under circumstances in favor of their own core competitiveness.

• Composite principle

Enterprise choose different independent innovation pattern for intellectual property rights, the enterprise requirements are not all the same. Such as the original innovation will need enterprise to have a strong reserves of talent and fund and strengthen the independent innovation investment actively; And in contrast, introduction, digestion and innovation for intellectual property rights, the enterprise independent innovation ability is not highly demanded.

Small-medium sized enterprises in production generally have more than one production process, and a process may belong to different industries which applies the totally different technology with other process. Small-medium sized enterprises in different production processes require not the same technical master degree. Even in the same production process, because may belong to different industry technology, small-medium science and technology based enterprises may have different degree of technical ability.

Therefore, small-medium sized enterprise in the process of production can't restrict to choose one single independent innovation pattern for intellectual property rights. If you want to develop better, independent innovation mode should be chosen based on the enterprise's actual situation, comprehensive consideration of the external and internal environment that the mode operates, thus to comprehensively select the best combination of independent innovation pattern for intellectual property rights. Composite principle is beneficial to the comprehensive utilization of each independent innovation pattern and its own advantage, to obtain intellectual property rights more efficient, improve the enterprise independent innovation ability, and realize the strategic target of enterprise more effectively.

• The internal and external environment principles

Small-medium sized enterprise does not live in unchanged internal and external environment. Due to the change of internal and external environment, small-medium sized enterprise will need to change the development strategy and the mode of independent innovation. That is to say, small-medium technological enterprises need to analyze its own internal and external

environment, then adjust different development strategy timely, and choose suitable independent innovation pattern for intellectual property rights, so that the independent innovation knowledge property right mode would be in accordance with the development of the enterprise strategy, which enable enterprise get better development.

• The expected benefit maximization principle

Small-medium sized enterprise's independent innovation activities can bring its economic benefits, since there are a lot of uncertainties, each innovation activities will be accompanied with a certain risk. Enterprise choose different independent innovation pattern for intellectual property rights, which will correspond different risk. The higher the risk is, the more the prospective earnings it gains, and the opposite is also true. Small-medium sized enterprise shall choose appropriate independent innovation pattern for intellectual property rights based on their ability and expected benefit maximization principle, that means we should consider the success possibility of the independent innovation pattern for intellectual property rights, and also ensure the enterprise innovation for intellectual property rights achieve the market value, to avoid the waste of enterprise resources.

CONCLUSION

This article simply analysis the relationship between the intellectual property rights and the independent innovation. And the paper discusses the driving force of technology-based SMEs' independent innovation pattern for intellectual property rights from two aspects, external driving force including science and technology, the market demand and competition, the government's policy incentives; and internal driving force including enterprise culture, the entrepreneur innovation spirit, strategy and management. Then the paper analysis two influential factors to the model of intellectual property innovation for SMEs, external factors including academic ability of the national innovation system, the level of government support, and legislation for intellectual property; Internal factors including heterogeneity about internal resource of the enterprise, evolution of independent innovation ability. In last, the paper analysis principles of independent innovation pattern from five aspects.

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