

Intellectual Property Management Strategies of Enterprises Based on Open Innovation Model

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Abstract In this paper, with the basic characteristics of open innovation model, the authors analyze the influences of the open innovation model to intellectual property management in companies, and then propose Intellectual Property Management Strategies (IPMS) under open innovation model: the construction of business model of intellectual property management through open innovation environment; exploring the tools and means on evaluation of the value of Intellectual Property (IP); fostering the trading market of intellectual property rights; strengthening both the protection on core technology owned by Enterprises themselves and risk control; creating an cultural environment of open innovation with the nature of equal partnership based on mutual trust.

Keywords Open innovation; Intellectual property; Management; Strategies

1 Introduction

In the 21st century, the pace of economic globalization is accelerating gradually, which is promoting the technology, information, knowledge, talent and other novel and innovative resources to configure and flow in a wider range. And meanwhile, technical difficulties also increase the cost of innovation, and the shortening of product life cycle (PLC) accelerates the need of research and development (R & D). Businesses demand the pace of innovation to speed up faster, leading to hardly meeting the need of market competition and development for companies only through internal R & D and hence some leading enterprises have been begun to actively seek and explore and acquire external creative resources. The creation, possession and use of knowledge resources have become the base for states to improve competitive advantages and enhance overall national strength. Businesses as the mainly innovative players, because of the divisional and distributional features for knowledge and in order to obtain and maintain a strong competitive advantage, must also explore and integrate external knowledge resources except for the organizations themselves creating and integrating knowledge, making use of wealthy knowledge and creativity outside companies to accelerate product development and market-based product. At the same time, it must open systems themselves for companies, and allow the technology un-used to transfer to other enterprises which can make the technology transferred generate value and potential. A newly innovative way began to emerge actively, namely open innovation.

Open innovation is the strategic measure so as to adapt to the world's industrial structure changes and the trend in world economic regional integration. Open innovation, however, has to involve in issues related to intellectual property management. YANG Wu (2006) discusses the development of the open innovation theory and its causes, analyzing from four aspects the theoretical issues on intellectual property management based on open innovation model, and then proposes studying the theoretical issues of intellectual property management based on open innovation from the angle of technological innovation, from the perspective of an economic, technological and legal integration, from the commercial point of view and from the interest mechanism. CHAI Jin-yan (2008) points out that while open innovation that emphasizes external knowledge resources in regard to the importance to business innovation process, bring new innovative benefits for the enterprise, it causes a series of implications the concept, property rights, knowledge assets, management costs and risks of intellectual property management in enterprises. With open innovation model, the intellectual property management in enterprises should adopt opening strategies, carry out independent innovation and update on system, and establish the cooperation mechanism for sharing and the mechanism for risk control. Based on the analysis of transformation of the behavior on the possession of companies under open innovation, WANG Sui (2010) proposes intellectual property based on relationship, and combines with the typical examples of open innovation to explain its specific application, with the aim to answer how to business use intellectual property flexibly and then benefit from open innovation.

2 The Nature of Open Innovation Model

In academic community, Henry Chesbrough, the professor of Harvard University, proposed the concept of open innovation first. In his academic work "open innovation: technological innovation and profit from the new rules", he argues that when developing new technologies, companies should also integrate the internal and external valuable ideas organically, meanwhile, using the internal, external two-channel of the market. In addition, bring the creative ideas to the market for enterprises can be achieved through external channels, which can escape from the shackles of the current scope of business for market-oriented businesses so as to reap excessive profits. With the context of rapid technological innovation and economic globalization, increasingly fierce market competition raises much more serious challenges against the ability of independent innovation of Chinese enterprises. Enhancing the capability of independent innovation is not only the need for improving national competitiveness, but also the key to sustainable development of companies. Therefore, how to use limited resources to enhance the capacity of independent innovation means strategic and practical significance. Professor Henry Chesbrough's open innovation model for businesses to make most use of and integrate internal and external innovative resources to improve the efficiency of innovation provides a new innovation management model.

Table 1 The Comparison Between Open Innovation and Closed Innovation

Comparative Detail	Open Innovation	Closed Innovation
Company philosophy	The best ideas may come from elsewhere	Non-invention here
Spatial extent of innovation	Integration of internal and external resources to achieve innovation	Emphasis on internal resources
Core competences	Search, identify, obtain and use external resources; the ability to integrate internal and external resources	Vertical integration of designation on Products and services
Research and Development (R & D)	Internal R & D or sharing external R & D outputs	Their own inventions and bring products to the market
Staff ideas and responsibilities	The main players of business innovation, and internal and external smarter staff to work together	Enterprises have the most intelligent members in the industry and complete the tasks top-down
User's role The attitude towards intellectual property	Passive acceptance of products Picking up external knowledge and internal knowledge of R & D are equally important; profit from the sale of intellectual property	Active co-innovators Ownership and strict control of intellectual property rights; emphasis on the retention of internal knowledge and minimizing the flow of knowledge as soon as possible
Creative ideas source	Enterprises which make full use of internal and external creative ideas can achieve success	Industries produce the creative ideas best; enterprises must be able to win in the competitive environment
Competitive advantages	Better business model	New technology and new products
Measurement on the success of innovation	Increase profits and sales revenue; shorten the time to market	Increase market share

Compared with open innovation, there is a contrast between open innovation and the closed model of innovation. Open innovation means that a good technical solution can be obtained from either outside or inside the enterprise. Open innovation strategies treat the innovative ideas both internal and external equally, in order to present the innovation to consumers with the minimum cost and the shortest time. As is shown in table 1, the comparison between open innovation and closed innovation is given.

Open innovation helps businesses acquire creative ideas from the outside, which allows businesses to obtain innovative resources in a short period of time and to achieve higher innovation performance at a lower cost of innovation, in return reducing the risk of innovation. For example, IBM changed the previous pattern of closed innovation, using someone else's technology to develop their own products, and meanwhile selling their technology to other companies so as to develop their own business. Paying close attention to academic research activities outside the enterprise and Carrying out venture to other

beginning firms, Intel makes most use of external technology efficiently. In China, there are some medium-sized high-tech enterprises embarking on open innovation activities, such as Huawei, ZTE, Baosteel and other companies.

3 The Influences of Open Innovation Model on Intellectual Property Management in Enterprises

In the context of open innovation, the allocation and flow of intellectual property resources occur to a larger extent, the source of the outcome of intellectual property rights will be more abundant, and the players who get interests from intellectual property will be diversification. What's more, the possession and use of the outputs of intellectual property will be more diverse, intellectual property management being more complex. Intellectual property management is the management of subject and object of intellectual property rights, including intellectual property resources management and the management of intellectual property results. Intellectual property resources, namely innovative resources in companies, mainly include human resources, knowledge, technology, capital, the market and information. The outcome of intellectual property can be the assets of intellectual property rights in enterprises, including technical innovative outputs and non-technological innovative ones. In the open innovative environment, significant changes have taken place to intellectual property management in companies.

(1) Knowledge sharing and transfer may lead to their exposure of key skills and knowledge to other enterprises, with the result of facing intellectual property risks, such as the loss of intellectual property rights, unfair competition, and intellectual resources plundered. In the context of open innovation, the increased mobility of innovative resources will lead to increasing difficulties to monitor and manage them. Open innovation contributes to the rapid diffusion of knowledge, maybe leading to the loss of ownership of knowledge to R & D companies, which will suffer great losses. Moreover, under open innovation model, the attribution of property rights and the distribution of benefits for cooperative innovation will be more complex than that of the closed innovation model, leading to intellectual property disputes easily. As open innovation is implemented in the relatively open environment and is a loose, flexible innovative model, there are some difficult terms to control in the innovation process to the companies, bringing greater risks to business management.

(2) The rise of the Internet and information economy era exerts business model of companies and strategic behaviors on fundamental impacts. The emphasis on the relationship between business organizations and the application of open innovation model enables companies to build and apply a more flexible intellectual property system, which plays an important role in the protection and encouragement for enterprises to profit from open innovation. At present, many firms (especially large corporations) have a considerable number of patents and inventions, many of which were found no longer important for the development of enterprises, or with other researches being by-products generated. Among these patents, only a small part was used by the enterprises themselves, a large number of patents being shelved. The acquisition of these patents also spent a lot of the money of the enterprise, but in turn they can be applied by other companies. Therefore, these patents can achieve the largest intellectual property value through selling out.

(3) In the context of open innovation, the subject of companies using intellectual property assets tends to be diversification, and the existence of the subject of intellectual property is in many forms. The cooperation between the subjects tends to be more frequent and widespread. With the development of the knowledge economy and network economy, increasing mobility of technical talents has come into existence. And it is increasingly difficult for businesses to have all the knowledge and the necessary technical personnel needed for long-term competition in the market. At this point, the cooperation with the subject of intellectual property rights the outside must be considered seriously rather than to pursue self-development. Therefore, with the open innovation concept, innovation results will diffuse so as to spread over companies' borders. The internal intellectual property rights can spread to other companies playing a role while the external intellectual property rights can also be accepted and applied by businesses. The enterprises which have expertise respectively can be achieved gathering resources of the advantages by cooperation through innovation process. And the enterprises can integrate social innovative resources effectively to enhance the intellectual property development speed. Meanwhile, the different innovative subjects share risks on innovation, improve the success rate of innovation and assure the quality of intellectual property assets.

4 Intellectual Property Management Strategies Based on Open Innovation Model in Enterprises

In the context of open innovation, companies must be with open awareness of intellectual property strategy, with the implementation of appropriate intellectual property management strategies to prevent loss of intellectual property assets, and acquire benefits through intellectual property management and transaction to create the greatest value.

4.1 Construct the business model for intellectual property management in open innovative environment

In a traditional business strategy, patent is seen as an entry barrier. Patents exclude competitors through legal means, which itself plays a protective role. In addition, in the closed innovation era the dominant mode of organizational innovation is the vertical integration strategy. Enterprises defend their commercial interests through allowing to the transfer of specialized knowledge with safe and effective feature in a closely related group. However, in the context of open innovation, companies should consider patents and other intellectual property as the profitable assets which can directly increase the market value of one company, and transfer their intellectual property through licensing, releasing intellectual property rights being shelved to generate profits. The system of intellectual property protection which is suitable for open innovative environment should link intellectual property rights with the business model and make full use intellectual property rights inside and outside the enterprise through effective business model leverage.

4.2 Explore the tools and means of the evaluation on the value of intellectual property

To measure the value of intellectual property rights accurately and objectively and effective protection of intellectual property strategies play a substantially important role for the protection of intellectual property. However, the assessment of the value of intellectual property would be a challenging task, since much of the corporate knowledge is embedded in the brains of knowledgeable staff. Moreover, this knowledge is dynamic and its value changes over time with a great volatility. As a result, an important aspect of intellectual property protection is to develop tools and instruments used for the assessment of intellectual property value, in order to have a clear understanding of intellectual property status faced by enterprises themselves.

4.3 Foster the intellectual property rights trading market

Property transaction intermediary organizations must develop various forms of technology intermediary service organizations actively in order to reduce the transaction both parties because of information asymmetry and market uncertainty. On the one hand, the organization should promote the allocation of intellectual property rights to guide industry, academia, research and other institutions to follow the principles of voluntary equality, mutual benefit and compensation, and good faith for the technology development and results transfer. On the other hand, it should select the distribution allocations adapting to technical characteristics and development requirements according to the actual situation. In addition, the organization should cultivate high-quality intellectual property brokers, standard technical trade intermediary services and examine the appropriate staff of technical trade intermediaries.

4.4 Strengthen the protection of core technologies in enterprises

(1) Establish a sound system of protection and safeguard

Based on the analysis of objective and process management during technology alliance strategy, enterprise should confirm the operator who exploring and applying core knowledge and technologies between the company and the union. Describe the user's identity and scope clearly, and identify the internal user who controls specific knowledge, besides, make sure the technology scope prescripts during when operating: indicate the individual or team that master knowledge and technology to the outside. On the basis, enterprise should confirm rules and regulations of core technology management and using range. Determine areas which the items belong to and ways they used by. Establish the model of selecting ideal partner, and use the appropriate contour map to indicate the technology and technical depth which need to master presently or future. Then it will suggest that the scope of staff who should master technology internally, and build the value evaluation of core technology in special using scope. The use of core technology refers to building a sharing value system which makes the core technology as the center based on model, and organize activities around the system.

(2) Strengthen the technical protection awareness of the technology alliance participants

Enterprise should systematize the thoughts of the internal staff before the implementation of technology alliance, so that they can understand the system and method of core technical management

deeply. Not only make sure the potential value brought by core technologies, but also predict the enormous risk after the loss of the core technologies. The enterprise should ask participants to avoid disclosure the internal technology which is not related to the company during both union work and amateur communication. It is never allowed to put the important technical information related to the enterprise at will during work, and enterprise should limit the union staff to enter the research and the production areas strictly.

(3) Keep the flexibility to maintain union contracts

Although technology alliance is an effective mode of enterprise competition, the failure rate is very high. One important reason is resulted of the union contract. Union is based on market opportunities, and it requires constant adjustment. The adjustment of union league means the regulation of union contract, and according to the development of market and technology, the changes continued to be adjusted. It seemed to be a dateless "opinions memorandum ". Therefore, union contract which is different from the general technology development contract should not be formatted. Union members sign contracts not only facilitate the alliance partners, but also modify the contracts to maintain the union flexibility according to changes in the environment.

(4) Strengthen risk control

Under the opening innovation environment, companies should introduce internal risk control mechanism in order to prevent the loss of intellectual property assets. Internal risk control mechanism contains venture capital mechanism and risk evaluation mechanism. Venture capital mechanism which contains the proper stage evaluation system could improve the operating efficiency of innovation items. It helps enterprises to improve the total using and integration of outcomes of the intellectual property, and enables collaborators bear the common risks and benefits together, and it increases the successful rates of outcomes of property and the possibilities of commercial operation. Enterprises should import risk evaluation mechanism at the same time, as it could enhance the early assessment capacity of the commercial potential of R & D results. Risk evaluation mechanism could evaluate the potential business value of the intellectual property resources which flow out and into the enterprise in order to avoid potential losses.

4.5 Create an opening innovation cultural environment contains equal partnership and mutual trust

Under the opening innovation model, the cooperation and innovation between enterprises is both an integrated network of knowledge flows, but also a network based on trust partnerships. The degree of trust between partners affects the success of cooperation during cooperation innovation. The base of the trust is equal cooperation, and all parties should respect their own intellectual properties so that create a diversified innovative environment. It could mobilize the enthusiasm of all co-workers, thus creates a truly original intellectual property results.

5 Conclusions

Intellectual property (IP) as a strategic resource, the role in economic development is getting more and more important. Whether economy in China can really integrate into the tide of economic globalization or not, whether Chinese companies can become bigger and stronger or not in competition, both need to integrate all aspects of knowledge, technology resources to improve the capability of independent innovation, and to manage and protect intellectual property. These are two key elements for China searching for sustainable economic and social development. State leaders have repeatedly mentioned the need to work to improve our independent innovation capacity. Independent innovation does not mean that closed innovation, and enterprises in the innovative process need to absorb the external key knowledge and technical resources. Researching the theory of intellectual property management based on open innovation has important practical and theoretical significance for combining the independent innovation with the open innovative trend closely. In the open innovation paradigm, management and protection of intellectual property in enterprises are not the control of intellectual property rights, but paying more attention to the configuration of intellectual property rights, application and increasing value of intellectual property. This requires appropriate exploring of business model to manage knowledge of companies, developing the tools and instruments to assess the value of intellectual property, and nurturing the trading market for intellectual property rights, and then improving the capability of intellectual property protection. Companies must establish an open strategic thinking on intellectual property management, analyzing the resources on intellectual property inside and outside the enterprises effectively and then achieve maximum utilization of the results on

intellectual property.

References

- [1] Chesbrough, Henry. Open Innovation: The New Imperative for Creating and Profiting from Technology[M]. Beijing: Tsinghua University Press, 2005:4 (In Chinese)
- [2] Chen Yufen, Chen Jin. Open Innovation: Mechanism and model[M].Beijing: Science Press, 2008:6 (In Chinese)
- [3] Yang Wu. The Study on the Management Theory of Intellectual Property Right on the Basis of the Open Innovation[J]. Studies in Science of Science, 2006, (4): 311-314 (In Chinese)
- [4] Tang Fangcheng, Tong Yunhuan. Open Innovation and Intellectual Property Protection of Firms under the Globalization of Economy[J]. China Soft Science, 2006, (6): 58-62 (In Chinese)
- [5] Chai Jinyan. Intellectual Property Management in Enterprises Based on Open Innovation Model[J]. Industrial Technology & Economy, 2008, (9): 18-20 (In Chinese)
- [6] Wang Ju. Research on an Appropriability Regime in Open Innovation: Based on Intellectual Property Right[J]. Science Research Management, 2010, (1): 153-159 (In Chinese)