Models and Path Research on Business Standards-setting: Under the Industrial Clusters Environmental

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Keywords: Business Standards; Standards-setting Models; Industrial Clusters; Strategy; Path

Abstract. Standard-setting activities become an important strategic behavior, which making companies gain a competitive advantage and industry break through the bottleneck. This paper is begin with the outline of business standards-setting models and the discussion of the characteristics and model of business standards-setting under the industrial clusters environmental; and followed by making analysis to the present problems about R&D activities, standardization management, standardization professionals, R&D fundings, coordination mechanisms and so on; finally, from the perfection of intellectual property protection system, construction of technology standard strategic alliance, talent management, creation of conducive policy environment, and public service system to catch up with the development of business standards-setting, which is based on the industrial clusters environmental. Our findings reveal significant insights for analysing standards-setting activities, but also for the management of enterprise and for policy makers.

Introduction

With economic globalization and integration development, trade exchanges between China and some developed countries have become increasingly frequent. In recent years, large companies in developed countries by virtue of its powerful technology and market advantage, and take this new way of "technology patents, patent standardization, standard monopolization" to get the place of standard monopoly. Due to the lack of an external key technology blockade and its own core technology innovation ability constraints, Chinese enterprises have to pay high royalties to foreign companies in order to get some "outdated" technology. In this situation, enterprises generally faced with the dilemma of low-end locks, which resulting in long-term absence of international technical standards-setting. The new rule states that the market who mastered the standards-setting rights, who will be able to control the market and obtain significant business benefits. Thus, during the process of enterprise standards-setting, a thorough analysis of corporate standards-setting model and its present situation is a prerequisite for the development of relevant policies.

The Outline of Business Standards-setting Models

Generally speaking, the models of business standards-setting including market coordination, committee coordination and government-led. Different business standards-setting models have different advantages and disadvantages. Standards-setting by market coordination model can quickly adapt to dynamic changes in market demand and technology, but there may be a variety of different standards to compete on the same market, which resulting in any of a standard is difficult to achieve economies of scale[1]. The committee coordination focus only on the number of standard output, and there may be the risk of failure through negotiation. Government-led standards-setting can rapidly occupy the market to achieve economies of scale, but the enterprises are often the object being asked to cooperate, which may increase the social cost of using the wrong technology.
The Characteristics of Enterprise Standards-setting Under the Industrial Clusters Environmental

Industrial clusters provide the necessary conditions for the formulation of enterprise standards. Around a particular area and the industry formed the clusters, within it the companies have similar cultural and institutional environment, and have the ability to share advanced technology, professional personnel and information resources. This not only reduces the cost of transactions between enterprises, but also improves the ability of clusters enterprise adapt to external changes and obtain competitiveness.

The Interaction between Participants

In the process of standard-setting, there is competition and cooperation between the cluster enterprises, and the presence of support and collaboration between complementary products suppliers, research institutions, associations and other standards organizations to form an interactive association in the standard-setting process, which will help enterprises within the clusters for continuous innovation.

The Network Effects within the Cluster

Between the various types of participation within the clusters can constitute a multi-layer network, namely layers expand from the dominant enterprises to suppliers, complements manufacturers, standards organizations and intermediary service organizations[2]. They are in a different manner on competition and cooperation process of the technical standards. The network between the various actors frequently engaged in transactions, communication and interaction with goods, services and information, so as to jointly promote the cluster development.

The Models of Enterprise Standards-setting Under the Industrial Clusters Environmental Enterprises Should Set Standards By Spontaneous Alliance

China's current enterprise standard system is poor adaptability to market. Most standards does not reflect the latest trends in the industry technological progress. The reason for this phenomenon is the introduction of the model of "government-led, business alliances implementation standards"[3]. This approach does not meet the development of the market. The correct model should be based on the needs of the market and the interests of the enterprises, allowing enterprises to develop standards by voluntary alliance. On the one hand, companies can regulate technical standardization activities by the market, which providing direction and motivation for the development of standards. On the other hand, it has a wide range of participants to establish enterprises standards under the industrial cluster environmental. The leading companies, suppliers, complementary goods producers and intermediary service organizations have different ways to effect on the standards-setting process.

As a matter of fact, the corporate alliance is combination of the various interests of the dominant companies, universities, research institutions, industry associations and other stakeholders, which based on the contract to engaged in R&D and standard-setting activities. Dominant companies have unique resources, such as core technology, market status and network capacity, which is the standard-setting initiator. Universities and research institutions have the advantages of high-quality talents, which is the main force of the R&D activities. Intermediary organizations such as industry associations are aware of the dynamics change of information and market, which is the boosters of R&D activities and the bridge of communication companies with universities and research institutions[4].
The Significance of Enterprise Spontaneous Alliance to Set Standards Under the Industrial Cluster Environmental

Establish the Best Development Order Among Alliance Members

Core business within the alliance through unification, serialization, modularization and other forms to achieve compatibility with the industrial chain of upstream and downstream businesses, competitors and complementary businesses[5]. It can optimize the competition and cooperation of the enterprise in industrial clusters environmental and regulate the order of competition.

Sharing Resource Among Enterprises and Dispersion R&D Activities Risk of Technology Standards-setting

From technology development to subsequent marketing, enterprises not only requires a lot of talent, technical support and funding, but also need its strong influence on the market. By establishing standard alliance, enterprises are able to strengthen the mutual exchange of technology and achieve complementary advantages, which will reduce the enormous costs and R&D risks.

The Use of Network Effects to Gain Competitive Advantage

Through consultation and negotiation, alliance members are able to expand the standards compatibility and openness, so that to attract more companies to join in. In addition, it can reduce the number of standards on the market so that consumer choice is relatively concentrated, and expand standard installed base. What’s more, alliance can also use its built between the corporate network to strengthen technology development activities, which will creating a "first mover" advantage[6].

The Present Problems about Business Standards-setting by the Voluntary Alliance

The Weakness of R&D Activities of Technical Standards and Imperfection of Intellectual Property Protection System

Since the existence of externalities making the cost and benefits of asymmetry and leading to market failure. At the same time, the R&D activities of technical standards is difficult and risky, and companies do not want to spend a lot of human resources and financial on it. Even if successfully developed, enterprises are likely to face the risk of being utilized by other companies, which also contributed to the R&D activities of business technical standards ran into the prisoner's dilemma.

The Disjointed of R&D and Standardization Activities

Companies do not have their own organizational structure and division of responsibilities. In addition, the standardization lack of the strong support of technological innovation and the technological innovation lack of effective guidance of standard. What’s worse, companies do not actively cooperate with scientific research institutes, resulting in a large number of technological achievements cannot be effectively transformed into industrialization and productivity[7]. As there is a big difference in technology standard evaluation between the semiconductor lighting and the traditional lighting, which resulting in standards-setting lags far behind the situation of the technology.

The Lack of Standardization Professionals and R&D funding

The shortage of high-level talent hinder the smooth development of the standard R&D activities. Since chinese people have poor standard competition consciousness, and the relevant departments pay insufficient attention to nurture standardization talent, which resulting in lack of key elements of standardization activities. At the same time, the enterprises lack of technical personnel incentive mechanism, resulting in a number of enterprises have a huge loss of R&D personnel.
The Uncoordinated Mechanisms between Enterprises and Intermediary Service Agency
Under the Industrial Clusters Environmental

Intermediary service organizations cannot fully meet the needs of professional and personalized business development. On the one hand, science and technology personnel in the development process are often not human, marketing, management, investment and financing services. On the other hand, companies are difficult to obtain technical advice, technical information in the process of technological innovation.

The Path for Business Standards-setting Under the Industrial Clusters Environmental

Enterprises are the main body and core force of technical standards for R&D activities. How to improve its own R&D ability is more important for the company to carry out the standard-setting. Therefore, enterprises should play a leading role in technical standards R&D activities and actively construct the technology standard alliance to stimulate technological innovation.

Improve Intellectual Property Protection System and Take an Active Participation in Standards-setting

Technical standards exist as public goods, other companies are able to share achievements of technology innovation. Therefore, the improvement of intellectual property protection laws to protect innovative technologies will not be disclosed. In addition, companies should actively participate in technical standards-setting. Companies establish a sense of standard competition to improve their ability to integrate resources. The standards developed by companies must reflect their own interests and represent the direction of development of technical standards, and thus will improve the international competitiveness of enterprises.

Strengthen the Management of Standardization

Advanced enterprise management system are able to improve the efficiency of R&D activities of technical standards, and further to optimize the organizational structure. Enterprise should supervise the implementation of standards and assess the rationality of criteria, and thus timely detect the problems of its own standards. The management system of standardization provide the necessary basis for further revision of standards. For example, Shenyang New Song Robot Automation Limited Liability Company adopt the operational mechanism of specialized departments responsible for overall management of the standardization work, which improved the efficiency of standardization management [8].

Strengthen Research and Development Abilities of Patent Technology and Construct of Enterprises Strategic Alliance

Technical standard contains a large number of core technology or patents, which requires enterprises to actively improve their own R&D ability. On the one hand, enterprises should strengthen the introduction of technology. It should be based on the market and their own R&D abilities to introduce a new technology. At the same time, enterprises should make full use of its own resources to mining technology derivative function. On the other hand, enterprises should take the initiative to strengthen cooperation with universities and research institutes. By conducting technical cooperation, enterprises are able to realize resources sharing and enhance the R&D capability of patent technology. In addition, through using the exclusivity of patent technology, enterprises are able to prompt the formation of dominant standards in the market.

Pay More Attention to the Cultivation of Professional Talents

Standard represents the advanced technology and requires the enterprise have high professional knowledge of technical personnel. Enterprise only strengthen the training of specialized personnel in order to effectively carry out technical standards activities. First of all, enterprises should set up standards-related curriculum and professional technical training to enhance their sense of belonging. According to the technical endowment arrange jobs for employees, enterprises can avoid the huge
loss of talent. Secondly, the implementation of equity incentive for core technical staff to stimulate technological innovation potential of every employee[9]. For example, enterprises should award for outstanding employees stock options. Finally, enterprises should organize employees to participate in technical exchange activities at the inter-enterprise, which will enhance the overall innovation capability of enterprises.

Accelerate the Formation of the Government Subsidy Business and Business Grants Personnel System

On the one hand, the government should increase the investment of special funds to provide funding for the standard corporate carry out R&D activities. The government should be sent standardization training personnel to the enterprise, which will provide the support of personnel and technical for the enterprise to carry out standardization activities. In addition, it should adopt other incentives, such as deduction the tax. On the other hand, enterprises should give full play to their core status in order to seek the support of industry and other enterprises. Through the way of multi-channel and multi-level, enterprises are able to increase sources of funding for R&D activities[10], such as the establishment of regular consultation liaison mechanism with the banking.

Create a Conducive Policy Environment for Enterprise Standards-setting

The behavior of enterprises standards-setting can be effectively need a relaxed and comfortable environment. While emphasizing the process of standard-setting without excessive intervention and policy constraints, such as clean-up the unnecessary aspects of technical project approval [11]. On the other hand, it is owned by the cluster in favor of the policies on financing, technology introduction, market regulation. For example, the cluster should improve financing mechanisms to reduce the financing costs of technology investment. In addition, it should construct the incentive mechanism within the financial sector, which will provide a fair and open environment for the enterprise to transit from independent innovation achievements to technical standards.

Strengthen the Public Service System of Technical Standards-setting under the Industrial Cluster Environment

Public service system is the communication bridge between the participants. Firstly, enterprises should construct a sound and efficient market information platform. Through the establishment of market information platform to accelerate the latest market information flows into the cluster and to avoid vicious competition among enterprises. Secondly, enterprises must establish a platform for the integration of multiple resources. Through make the full use of advanced management methods, enterprises are committed to improving the efficiency of R&D activities and speed up the development pace. Finally, enterprises can take advantage of internal industry association statute to coordinate the member's individual behavior. Through the punishment for a variety of unethical behavior, the clusters can standardize the order of the flow of technology and to curb vicious competition.

Summary

Standards as an advanced form of competition among enterprises have become an important means of technology and market monopoly. Through a variety of ways to promote the market chose to use its technology and make its technology or products which based on this technology to become the industry de facto standard, enterprises are able to reduce associated risk. Those companies were the first to develop technical standards and management are most likely to grasp the initiative in the market. To a certain extent, enterprises are able to break the monopoly of key technologies and difficulties of low-end locking technology, which has brought a huge positive externalities to the state and industry.
Acknowledgements

Fund project: The national social science fund project (14BGL179), the ministry of education of humanities and social science fund project (12YJA630060)

References


