



Enterprise Patent Strategy and Development of Guangxi Sugar Industry

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Abstract

In the era of knowledge economy, patents which were a legal protection means of technology have been transformed into main resource for enterprises to make profits. Based on patent documents analysis and cases analysis, this paper introduced some concepts of enterprises patent strategies and then, combining with development situation of Guangxi sugar industry, explored how to promote improvement of Guangxi sugar industry with patent strategies.

Keywords: Patent strategy, Guangxi sugar industry, Development model

1. Introduction

On June 5, 2008, the State Council issued <national intellectual property strategy outline> (short for the Outline). And the Outline pointed out: China is standing at a new historical turning point. Developing and using knowledge resources is of great strategic significance because they change economic development approach, mitigate environmental constraints, and enhance core competitiveness of a country (State Council, 2008). Due to the rapid development of science and technology, knowledge factor has become into dominant resources of economic development and economical development modes are changing from traditional modes which relied on capital, nature resources and labor into new mode which relies on knowledge, talent and information (LI Chen, 2007). And competition among enterprises is becoming more intense in knowledge and technology.

Sugar industry, called “sweet industries of workers and peasants” in Guangxi, is Guangxi traditional and pole industry. Since 1993, Guangxi has been the largest sugar producing province (autonomous region) in China and the main sugar producing area in the world and its sugar production has accounted for about 60% of total sugar production in China. Therefore, Guangxi sugar industry, to a certain extent, can represent sugar production scale, sugar-making technology and development model of Chinese sugar industry. So, it is of great significance for us to explore how to transform production mode and to upgrade technology of Guangxi sugar industry with knowledge resources and patent strategies. Based on patent documents analysis and cases analysis, this paper introduced patent strategies in enterprises and then, combining with the situation of Guangxi sugar industry, explored how to promote development of Guangxi sugar industry with patent strategies.

2. Enterprise patent strategy

2.1 Definition of enterprise patent strategy

Patent strategy is a system planning of using patents which are associated with patented technology, law and economic principles (Wei Zhenni, 2008). It is used to guide competition in science, technology and economic field for enterprises to seek best interests.

Enterprise patent strategy is an overall plan for enterprises to use patents. In this plan, enterprises make some rules or policies to make fully use of patent intelligence information. Many enterprises in the world have thought patent strategy as main part of enterprises development strategies. Patents has been transformed from a pure legal defensive means of technology into a powerful resource used to obtain benefits and monopoly market (Li Lijing, 2000).

2.2 Classification of enterprise patent strategy

Enterprise patent strategies include patent creation, patent applications, patent implement, patent litigation, patent documents collection, processing and utilization etc. Enterprise patent strategy can be divided into two categories (Wei

Zhenni, 2008). First is offensive strategy which mainly refers to active and timely patent application and obtaining franchise. Through predicting future technology development, the offensive strategies pay more attention to the core technology or basic research. Second is defense strategy, also called patent network strategy, which mainly refers to prevent others from obtaining correlative patent through various means to protect their own patents. For example, enterprises develop external technology around their owned basic patent technology and weave patent network for protecting their core technology. There are still other derivative patent strategies, such as follow-up patent strategy. It means that enterprises purchase patents from owners, or exchange patented technologies with owners when these patented technology performed market value but they don't do original technology research and development. And there exists mixed patent strategy which integrates with various patent strategies.

2.3 Cases of using enterprise patent strategy

Case 1: Japan's Canon Inc. is one of the world's best camera manufactures. In the late 1960s, it got into the photocopiers manufacture area, which was at that time dominated by U.S.A. copier giant - Xerox Corporation. Canon Inc collected and analyzed all the authorized patents of Xerox Corporation, and then invented a new generation of copier technology, thereby replaced Xerox Corporation as the world-renowned copier and printer manufacturers. Canon Inc successfully developed and extended its market share with patent strategy, and widened product scope from copiers to digital printers and semiconductor manufacturing equipment (Tong Wei & Tong Shuxing, 2002). What's more, Canon and other Japan's successful enterprises, especially in high-tech industries, have established patent information platform to enable them easily and timely to grasp the latest technology trends for them to make rapid development.

Case 2: Motorola failed in color TV field because of its ignoring on Japanese competitors' technology development, and had to exit from color TV industry. Since then, the company learned a lesson and paid more attention to the collection of patented technology intelligence and other important technical information of Japanese rivals. From this collection, the company comprehensively analyzed and assessed its competitors in technical strength, technological developments and technology strategy. Based on these, Motorola established their own strategic objectives, made adjustment of technology research and development direction, developed new products and then achieved tremendous success in the field of mobile communication (Yang Ruiguang & Feng Xiaoqing, 2007). This case showed that it is of great significance for enterprise development if patent resources are effectively used.

Case 3: Qingdao Haier Group can be thought as a leader and success enterprise of using patent strategy in China (Kong Lingbing, 2005). With the patent strategy of "using open and known technology" and "effective patent technological transformation", Haier Group developed into a current world-known enterprise from a small workshop. As early as 1987, Haier Group issued a patent briefing and took it as an important internal publication, and meanwhile updated monthly to ensure its technical staffs keep the latest patented technologies. With more and more new technology included in patent information, the Group has bought Chinese patent CD-ROMs since 1997 and updated every quarter so that patent information could fully meet the need of technological innovation and of new patent application. Then Haier Group's technical staffs assorted and summarized patented technologies so as to facilitate them to achieve technological breakthroughs with maximum efficiency. For the purpose of entering overseas market and of avoiding to infringe on foreign enterprises' patent right, Haier Group established special CD-ROM databases in 1999 which included many relevant patent literatures of U.S.A., Europe, Japan and South Korea. As globalization strategy proposed, Haier Group also cooperated with the Literature Department of the State Patent Office to establish database which included many existed patents of U.S.A., Japan and other developed countries. Now, Haier Group staffs can search any patent needed in product development stages in themselves patent database.

From development road of the above successful enterprises, we can learn that these enterprises all paid much attention to collecting patent information and building patent information system, and all effectively used patent strategies to develop themselves.

3. Patent status of Guangxi sugar industry

With the coming of knowledge-based economy, more and more enterprises take patent as a kind of economic resource, even as a new economic growth point. And some enterprises make systemic patent strategy net or build "patent barrier" to prevent rivals in market. In such an environment, Guangxi sugar industry should effectively use patent strategy to develop itself, and upgrade quality of industrial development.

3.1 patent status in Guangxi sugar industry

Since the reform and opening, China's sugar industry transferred in large-scale from Guangdong to Guangxi. Through 20 years development, Guangxi sugar industry has grown to 94 sugar enterprises in total number, and had daily production capacity to extract sugar from sugarcane over 0.3 million tons. The annual output of Guangxi sugar industry accounted for almost 60% of national total production (Huang Han, 2007). Through improving sugarcane variety, innovating technology and reformatting enterprise system, Guangxi sugar industry has accumulated certain innovation ability, technology in sugar-making has gone ahead in China sugar industry and the annual output of sugar has greatly

increased. Through searching and analyzing patent information from the "Experimental platform of Patent information services" and "China patent Digest" CD-ROM database data, we can clearly learn the ability of innovation and the status of development of Guangxi sugar industry (see table 1).

Table 1. the yearly patents applied and authorized in Guangxi sugar industry

year	1985-1990	1991-1995	1996-2000	2001-2005	2006	2007
Number of patents applied	4	15	15	31	11	2
Number of patents authorized	0	1	1	12	3	2

The table 1 showed that Guangxi sugar industry had 78 patents applied and 19 patents authorized from 1985 to 2007. The total patents applied and authorized have been less, but increased year by year, especially after getting into the 21st century.

In the data, the number of invention patent accounted for 42.3% of total patents, and the others were utility model patents. This meant Guangxi sugar industry had certain creative abilities. The technology fields of applied patents were mainly in C13D1 (sucrose juice production, account for 25% of all the patents applied) and C13D3 (sucrose juice purification, nearly 16% of all the patents applied), followed by C13C1 (extract sugar from sugarcane broken), C13F1 (sugar juice enrichment, evaporation and boiling), B01D33 (filter used in filtration operation), around 5% in all the patents applied.

However, comparing with foreign sugar industry, Guangxi sugar industry still had a wide gap in main production technology, production equipment, sugar products and comprehensive capacity of sugarcane utilization. Table 2 showed patents distribution of Guangxi sugar industry and of foreign sugar industry in IPC Classification.

Table 2. Patent distribution in IPC Classification between Guangxi and foreign sugar industry

Class No.	A23L	B01D	B30B	C12N	C13C	C13D	C13F	C13G	C13K
Guangxi sugar industry	1	5	8	0	7	40	9	4	0
Foreign sugar industry	5	1	0	5	7	18	14	0	20

Table 2 showed that foreign sugar patents applied in China mainly concentrate in processing technique of sucrose and its derivatives, such as C13K (deep-processing products and preparation of glucose and fructose), C13F (preparation or processing of raw sugar and syrup), C12N (microorganisms or enzymes, and their combinations), B04B (centrifuge). And foreign sugar industries had obvious advantage in the field of refined sugar and processing techniques of sucrose. While Guangxi sugar industry had a comparative advantage in C13D (sucrose juice purification), B01D (clarify devices), B30B (mechanical press), but most of these patents applied belong to utility model.

3.2 Problem in innovation of Guangxi sugar industry

According to contrastive analysis in patented technology, Guangxi has accumulated certain innovation abilities and technical advantages in the field of sucrose and its derivatives. And these could be showed from the facts that Guangxi sugar patent application was in the first place and that treatment technology of alcohol wastewater was in comparatively advanced stage in China sugar industry. However, the abilities of innovating technology, creating and using patents of Guangxi sugar industry still need to be improved for sugar industry sustainable development. And main problems in Guangxi sugar industry were as following.

(1) More investment were put in projects of increasing sugar-producing scale, but less in technology innovation of sugar equipment and processing techniques of sucrose, and there were less invention patent technology. During the "tenth Five-Years" and "eleventh Five-Years", Guangxi introduced and invested many large-scale sugar-making projects. However, those projects mainly concentrated in part-improvement of production line but not in development of core technology of equipment so that main equipment of sugar-making, such as centrifuges, has still depended on import equipment. The major products in Guangxi sugar industry were still white sugar and brown granulated sugar, but some products with high additional value, such as refined sugar, were less. Moreover, the preparation technologies of sucrose derivatives, such as lactic acid and citric acid, were also rare and new technologies were not created by the improving and innovating of production line.

(2) There were many sugar manufactured enterprises, but a little of them was able to create patent technology. Guangxi has 94 sugar enterprises, but less than 10 percent of them have already applied patent for their invention or innovation. Guangxi Guitang Sugar Co. Ltd., one of the largest sugar enterprises and a leader enterprise in Guangxi sugar industry,

applied only 26 patents from 1991 to 2006. And many other patents authorized were not working because of ignoring or bad management. What's more, some other large-scale sugar enterprises in Guangxi, such as South China Sugar Industry Group, East Asia Sugar Group, Fung Group of Sugar, Farm Sugar Group etc, had obviously advantage in sugar production and in comprehensive utilization of sugarcane, but had no any patent applied

(3) Guangxi Sugar enterprises had no new knowledge about resources factors and did not realize that the patent is becoming a new important resource of production. Now, some leading enterprises have built systemic patent strategy for enterprise development and taken patents as resources of production or a new economic growth factor. For example, some foreign enterprises of sugar-making, such as enterprises in Australia, India and Brazil, applied for patent protecting for their innovation and technological achievements through Sugar PCT (Patent Cooperation Treaty) and have already increased protection power of their intellectual property in China. But three sugar enterprises in our country were facing "337 investigations" from U.S.A. when they exported and sold their sugar products and sweeteners in USA. "337 investigations" alleges that our sugar enterprises infringed the five patents in production methods of sugar-contained sweeteners. In addition to the "337 investigation", the United States sued for a general exclusion order and prohibition order to our sugar enterprise. If adopted, all China's sugar enterprises will be unable to export their sugar products to the U.S.

4. Development of Guangxi sugar industry

Now, patents have become into important resources for some leading enterprises to develop and compete. Guangxi sugar industry should pay more attention on patent strategy so as to achieve industrial upgrading and sustainable development.

4.1 Training ideas of patent strategy.

Ideas are knowledge or awareness implied in personal brain and grown gradually up by learning, educating and practicing. Training ideas of patent strategy means that various measures will be taken for improving patent strategy consciousness of employees, technician and managers in sugar enterprises. According to the spirit of "national intellectual property strategy outline", sugar enterprises should take various ways, such as professional training, universal educating, special promotion, implementing etc, to make their staffs learn the importance and urgency of applying patent strategy to develop sugar industry. In implementing patent strategy, sugar enterprises should do best to stimulate their staffs to create and use patent strategy as much as possible.

4.2 Building patent information platform of sugar industry.

Patent information platform is the best information service center that can provide technical information and technology trend of sugar industry development. Each patent specification has word descriptions and graphs in detail. These patents give the latest technology as well as technical principle. Reading information from patent platform, staffs in sugar industry can directly learn technology trends in sugar industry development; obtain inspiration of solving problem in technology and also avoid wasting research time and fund because about 70-90% of all invention and creation recorded in patents have never been published in publications before. According to statistics from The World Intellectual Property Organization (WIPO), 35 billion Marks (about ¥180 billion) would be saved every year in scientific research and development if patent information and documents were made good use. Haier Group in China household electrical appliance industry is a successful enterprise using patent strategy. Haier Group implemented the patent strategy of "using open and known technology" and "improving effective patent technology", and then creating a new breakthrough in used technology. By doing so, Haier Group became a leading enterprise in household electrical appliance industry from a small workshop in 1978.

4.3 Making appropriate patent strategies.

Patent strategy in Guangxi sugar industry should be a system strategy which includes encouraging patents creation, strengthening patents management, promoting patents use and protecting valuable patent. In them, creating patents and using patents are more important. First, creating patents is the basic of patent strategy. So appropriate policies and incentive mechanism should be made to stimulate employees' patent creation and to motivate staffs innovation and invention. It is also a better way to encourage cooperation between sugar enterprises for capturing and researching core technology and then for using them together so as to make these core technology into general technology and standard in sugar industry. Second, using patents is the goal of patent strategy. Therefore, sugar enterprises should train employees to improve their abilities and skills of using various patents, such as patented invention, patent Union, patent cross-licensing and patent purchasing etc. When patented technologies are used in production or become into new goods in market, economic value of patents can be reflect. So upgrading of Guangxi sugar industry and improving of economic growth modes should use patent strategies and transform patented technologies into real productivity.

5. Conclusion

In the era of knowledge economy, competition among enterprises has been transformed from products and technologies

competition to patent competition. Many leading enterprises have changed their competitive strategy from capital and products export in the past to present “patents first, and then capital and products”. They made profit by exporting technology and selling patents. Sugar industry, as Guangxi pole industry, needs to learn using patent strategies so that development modes of Guangxi sugar industry change step by step from traditional mode of relying on capital, resources, labor to new mode based on knowledge, talent and information.

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