



**Asia-Pacific
Economic Cooperation**

**Nanhainan Co Ltd
China**

Nanhainan's Intellectual Assets Management Capacity Building

Written by

Yuan Juan

Director of Research Department of Foreign Human Resources
Chinese Academy of Personnel Science

and

Xiong Ying

Deputy Director of Research Management Division
Chinese Academy of Personnel Science

The case was developed based on publicly available information solely for educational purposes as a contribution to the project entitled "IPR Strategies for Emerging Enterprises – Capacity Building for Successful Entry to Global Supply Chain," conducted under the auspices of the Asia-Pacific Economic Cooperation (APEC). The case is neither designed nor intended to illustrate the correct or incorrect management of the situation or issues contained in the case. Reproduction and duplication of this case for personal and educational use is encouraged. No part of this case however can be reproduced, stored, or used for purposes other than the above without the written permission of the author(s) and APEC.

Names of individuals, organizations as well as figures are disguised.

© 2010 APEC Secretariat

Introduction

Intellectual assets refer to the business operation knowledge system exclusively owned by an enterprise, including all special knowledge and resources the enterprise has. Foremost among these are innovative human resource, technology and knowledge. Intellectual assets are the basic elements in generating and increasing market value in a knowledge-based economy. The core competencies of an enterprise include its specific business system and the totality of its knowledge and resources.

Intellectual capital comes as a result of the transformation of intellectual assets.

Intellectual Assets Management (IAM) is a comprehensive management system that includes, among others, human resource management, marketing management, intellectual property protection, public relations, and technology and information. The main task of IAM is to promote independent innovation, generate or develop, and transform intellectual property into business resources or intellectual assets.

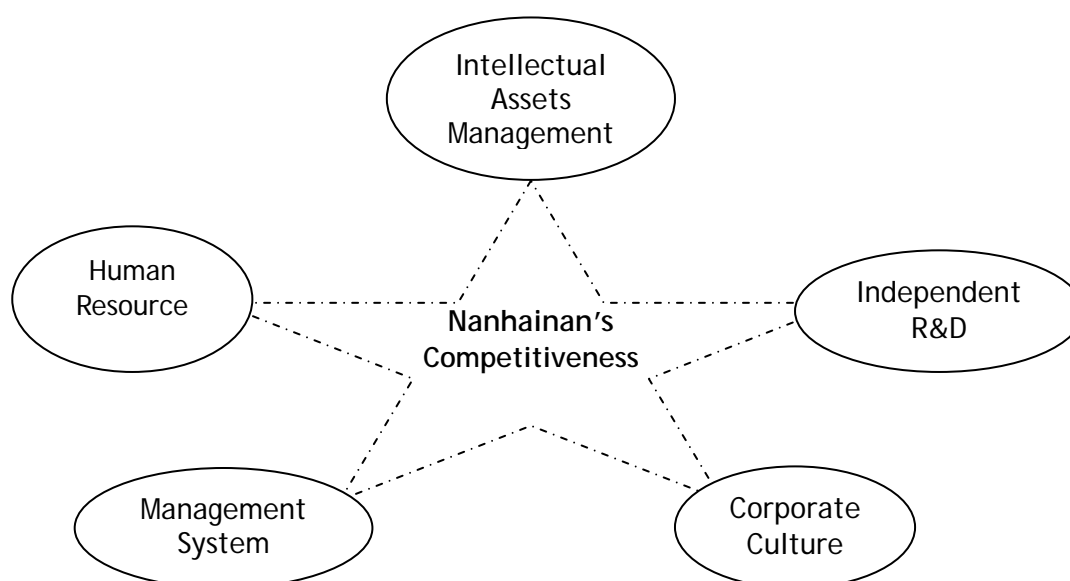
Nanhainan Co. Ltd. (Nanhainan)

Nanhainan was mainly engaged in the manufacture of switch, transmission, wireless and data communication products, and in providing worldwide telecom network equipment, services and solutions ranging from research and design to production and sale. Founded in 1988, Nanhainan had grown from a small company with a registered capital of only RMB 20,000 into a large company with a total turnover of over RMB 60 billion. (Exhibit 1 describes the major milestones in Nanhainan.) As of January 2010, Nanhainan had over 100 branches worldwide. It marketed its products and solutions in over 100 economies and its operation was supported by a worldwide marketing and service network. Exhibits 2 to 5 show Nanhainan's growth in terms of sales, contracts and patent applications.

The company developed its core competencies in the electronic and telecommunication industry by building its R&D capacity, pooling human resources, improving the management system, developing the corporate culture and carrying out intellectual assets management (Figure 1). According to Mr. Song, Chairman of SZPA, "Nanhainan's most valuable asset is a series of core technologies with full independent intellectual property rights rather than spacious plants."¹

¹ The speech of Song, Chairman of SZPA and vice president of NHN delivered in the seminar on "NHN's Intellectual Property Road" held at SZPA, July 21, 2005, www.interhoo.net/forum/.

Figure 1. Elements of Nanhainan's Competitiveness



Based on the number of patent applications filed with the Patent Cooperation Treaty (PCT) of the World Intellectual Property Organization in 2008, Nanhainan ranked first with 1,737 applications, followed by Panasonic, Philips and Toyota. Among the top 100 companies with patent applications filed with the PCT, 38 were from the USA, 28 were from Japan, 13 were from Germany and two (Nanhainan and ZTE) were from China.

The presence of intellectual assets alone did not however necessarily translate to company productivity. What was key to Nanhainan's business growth and development was its capacity to effectively manage and use its intellectual assets as its biggest resource.

Economic Environment in China

Nanhainan's growth could be largely attributed to the advancement of China's economic reforms and opening up policy which led to her economic development. In general, Nanhainan's emergence as a leading company was a direct result of the policy encouraging private sector entrepreneurship.

The company flourished in the midst of preferential policies in the Shenzhen Special Zone where it established its operations. The Shenzhen Special Zone provided a favorable investment environment for private local enterprises and foreign partners in the form of preferential taxation, greater independence in international trade activities and adherence to international business practices, among others.

Shenzhen's policy promoting entrepreneurship among scientific and technological talents hastened Nanhainan's growth. To a large extent, Shenzhen's policy environment, as well as the economic environment in China as a whole, encouraged Nanhainan to pursue long-term strategic objectives beyond short-term benefits.

Growth Strategies

Since the launch of the reform and opening up policies, Chinese private enterprises had grown vigorously. Most of them however had relied on cheap labor or resource advantage as well as on other business practices such as processing cooperation, localization prioritization, niche marketing and simple copying. They conducted minimal product R&D and did not have core technologies for high-end products. They also tended to adopt low-level and traditional development that did not provide much room for further innovations.

Nanhainan's entrepreneurial and development mode initially integrated innovation with speedy entry into a potential market. At the initial stage, Nanhainan emphasized the need to follow the industry leader's methods of improving and quickly adopting existing technology, and tapping existing markets. As Nanhainan matured, however, it started to conduct its own R&D, create its own markets and develop its competitive advantage. It used the existing technologies to develop new products and technical innovations, and commercialized new technologies to create new industries. Most importantly, Nanhainan attached great importance to the management of its valuable intellectual properties (e.g., technical inventions, commercialized new technologies), and formulated and implemented its own intellectual assets management strategy.

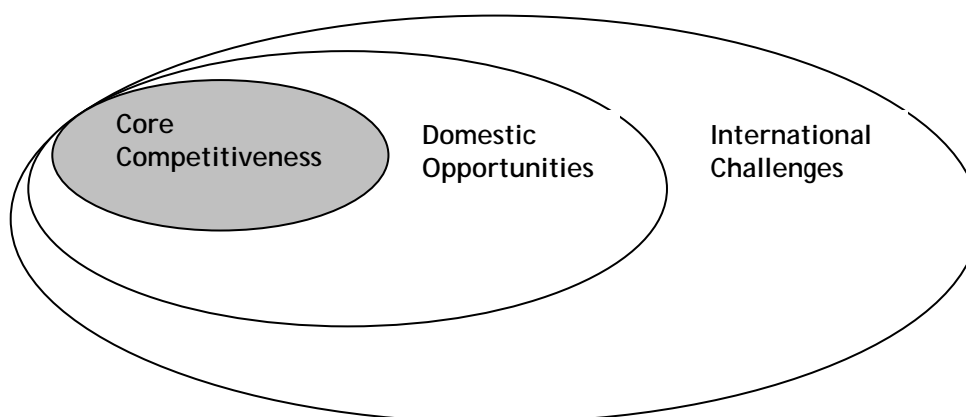
Nanhainan's Entry into the International Supply Chain

Nanhainan's international operations focused on electronic communications. After its entry into the overseas market in 1996, it took the company around three years to achieve a breakthrough and start getting orders from Burma; and Laos in August 1999. In 2001, Nanhainan pursued its strategy to develop the European and the US markets, but faced fierce competition from European and US rivals in terms of technology and market.

Cisco's intellectual property action against Nanhainan in January 2003 was the climax of the crisis that befell Nanhainan's international operations. Fortunately, the case ended in reconciliation and through authentication by a third-party jury, Nanhainan was found not guilty of infringing on Cisco's intellectual properties.

Nanhainan transformed this crisis into an opportunity to establish its presence in the international market (Figure 2). It adopted an open, flexible and collaborative attitude towards the protection of intellectual property rights and offered high-quality and cheap products and services, thus winning the trust of European and US customers. In the process of internationalization, Nanhainan learned the way of independent innovation by using its intellectual assets and technical standards and undertaking continuous product R&D.

Figure 2. Domestic and International Environments for Competitiveness



Intellectual Assets Management at Nanhainan

Nanhainan's leaders chose to drive international operation and sustained development through IAM. Nanhainan adopted and followed international intellectual property rules. It established a consultation system and Cross License mechanism with intellectual property owners and an effective system for the R&D process, from project tracking and analysis to project proposal and implementation, comparison, and later-stage management. It also set up a specialized department of IAM and a fairly complete intellectual property system.

Nanhainan implemented an IAM strategy aimed at "developing world leading electronic and IT support system with independent property rights."² Its IAM capacity was directly reflected in the creation, management and transformation of intellectual properties. It was indirectly reflected in the company's leadership, human resource management, internal management system and corporate culture focused on creation and innovation.

Intellectual Property Creation

The company created intellectual properties by pooling outstanding technical professionals and improving its capacity for R&D. It attracted outstanding graduates in communications and computer network, and other science and engineering majors from famous universities with the offer of high salaries. It recruited talents in a rigorous manner to ensure that every employee satisfied the needs of the company. In particular, it spared no amount in attracting experienced and outstanding R&D talents in the industry to work for the company.

In July of 2009, Nanhainan appointed Tim Watkins as Vice President of Nanhainan Western Europe. Prior to joining Nanhainan, Tim was the North EMEA president at Nortel Networks and was responsible for its carrier and enterprise business in UK, Eire and Benelux/Scandinavia and the Middle East. In Nanhainan, Tim would be handling sales and marketing in the Western European region and providing strategic guidance for further collaboration with leading European operators. Another Executive Director in

² Article 10, Chapter 1 of NHN Basic Law.

North EMEA had also accepted the invitation of Nanhainan to be its CTO Chief Technical Officer (CTO) for the North American Region.

As of 2008, Nanhainan had 34,000 engineers and over 80,000 employees, 43% of whom were engaged in R&D³ and market development while only 20% were with the administrative and production staff.⁴

Managing Intellectual Property

Nanhainan set up an intellectual property department composed of various administrative divisions dealing with patents, trademarks, confidentiality, scientific and technological information, contract review, foreign cooperation and legal affairs. The department formulated and implemented the company's intellectual assets management strategies; organized the patent processing system, trademark planning and management regulations and business processes; undertook the processing of domestic and international application, maintenance and analysis of patents; and participated in contract reviews of corporate R&D systems and in negotiations involving intellectual properties and legal actions.

Nanhainan also established standards and incorporated IAM into the corporate business process as well as in the various ISO 9000 processes. IAM was carried out in the whole research process, product development, production, sale and service, and in the establishment of an intellectual property protection network.

The company attached great importance to international exchanges and cooperation in IAM, thus developing a multi-aspect and multi-level IAM network. The department of intellectual assets management, jointly with other departments, set up a system and coordinating group to strengthen the communication and exchange of information between the managerial and the R&D personnel. In order to effectively promote international exchange and cooperation, the IAM staff and management were required to attend various seminars and symposia to keep themselves up to date with the latest advances in telecom technology of other peer and rival companies. Nanhainan provided the opportunity for the staff to work overseas and promote technological exchanges with foreign companies. Upon their return, they were expected to train the local software department staff on the latest technologies that they had learned.

Transformation of Intellectual Property

Nanhainan believed that in order to be sustainable, it had to undertake independent innovation and transform intellectual assets through commercialization and capitalization.

Commercialization of Intellectual Assets

Nanhainan established a well-equipped product pilot experiment center equipped with advanced testing tools and manned by engineering experts. The center accelerated commercialization of technical innovations by monitoring and testing new products and devices in a centralized and controlled environment; increasing product

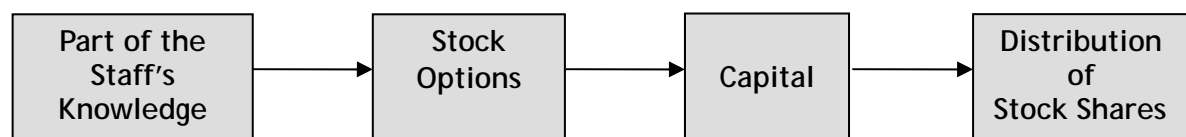
³ NHN's Human Resource Report of 2008, issued on 18 January 2009.

⁴ Article 28 of NHN Basic Law.

reliability through constant quality demonstration and tolerance design tests; and improving technology and reducing product cost.⁵

Capitalization of Intellectual Assets

Nanhainan's Basic Law specified the requirements for the capitalization of intellectual property. Nanhainan implemented the employee stock ownership system and accomplished capitalization through equity and equity capital distribution. The stock rights were distributed on the basis of intellectual assets rather than capital. The staff's due rewards for their intellectual assets were transformed into stock options, and then further transformed into capital. The profits derived from the capital were realized through the distribution of stock shares which reflected the value of the knowledge assets. Such capitalization of knowledge is illustrated by the following flowchart:



Other Important Elements to Support IAM

Leadership

Leadership played a decisive role in Nanhainan's IAM strategy. Nanhainan's founders were high-caliber professionals who were entrepreneurs at heart; they wanted to undertake R&D and venture into the emerging electronic science and technology field.

Nanhainan's president was a leader endowed with a strategic perspective. He underscored the importance of independent innovation and intellectual property to Nanhainan's growth, and organized and established Nanhainan's IAM system and implementation plan. He had an uncanny ability to analyze and understand the market, accurately choosing Nanhainan's target markets and seizing market opportunities way ahead of competitors.

He was known for his magnanimity, responsible and pragmatic leadership, aggressiveness in the face of competition, and steadiness and courage amidst crisis situations. His strong sense of crisis alerted him to the high technical upgrade rate and mortality of the electronic communications industry. He constantly reminded Nanhainan's staff to be aware of "how to spend the winter." For example, in 2002, in the midst of Nanhainan's successful operations, the president, who rarely appeared in the media, published an article entitled "The Winter of Nanhainan" to warn its staff to be ready for a crisis. The article has become a classic learning material for many corporate executives and managers.

Human Resource Management System

Training and Development

⁵ Article 28 of NHN Basic Law.

Nanhainan attached great importance to the development of creative talents and organized creative talent teams to serve the company's requirements. It set up its own human resource management system focusing on, among others, training, capacity development, incentives, and "lay off the last" system.⁶

Nanhainan classified IAM creative talents by level and defined the competency required at each level. Those in the IAM department formulated the intellectual property strategy and conducted internal management of intellectual assets (patent, trademark, copyright and business secret) on the basis of the business development strategy. The management staff had to have a strategic orientation as well as an integrated and operational expertise. The position required a degree in science and engineering, rich scientific, technological, and scientific research management knowledge, business management, familiarity with the laws and regulations on intellectual properties; capacity for strategic thinking, keen vision of discovery and identification; and capacity for quick decision-making.⁷

Nanhainan's creative talent training and development process was as follows:

1. **Pre-job training.** Training was conducted in a militarized manner, focusing on corporate culture, production safety and norms of etiquette. Strict discipline was observed throughout the training which sought to implant Nanhainan's corporate culture among employees upon entry.
2. **Training on key posts.** Nanhainan designed a number of deputy posts for promising employees in order to retain all creative talents and enrich the resource pool of the company.
3. **Job rotation.** R&D management personnel were trained on the market aspects to enhance their understanding of the market for the company's products.
4. **Staff development.** Technical and intellectual property professionals were sent to local and overseas seminars and training to update them on the latest information on communications technology and intellectual assets. Famous lawyers, patent examiners, and patent and trademark agents were invited for special lectures on how to address problems arising from staff involvement in intellectual property management.

Nanhainan established a regular channel for the career development of R&D staff. A technical qualification certification system (six grades/levels, given once a year) was established in cooperation with the former Ministry of Labor (now Ministry of Human Resources and Social Security). The certification not only acknowledged the performance, basic skills, and technical growth of employees in the company, but also recognized their experience.

⁶ The person with the lowest grade in the performance evaluation will be laid off from his position.

⁷ Chinese Academy of Personnel Science, China Law Association on Science and Technology, State Intellectual Property Office of the People's Republic of China. *A Study of China's Intellectual Property Management Engineer Professional Qualification System*, November 2008.

Incentive System for Intellectual Assets Creation

Nanhainan's incentive mechanism was a combination of material and spiritual incentives to generate employees' enthusiasm for their involvement in patent management. It used 3-elements KPI, team contribution and improvement to assess the performance of R&D teams or individuals every quarter. The system provided for huge sums of bonus equivalent to one-third of gross annual income of the company to the teams or individuals who had made remarkable breakthrough, improvement or innovation in products. In line with its stock option system and based on the results of the performance appraisal, the staff could acquire some shares in the company. The money paid for the shares was mainly determined by the company's appraisal of the staff's sense of responsibility, devotion to work, and potential contribution. Nanhainan also practised the "Lay-off-the-last System" to inspire employees' entrepreneurial spirit.

Internal Management System

Nanhainan formulated the Nanhainan Basic Law which established its management program at the early stage of its development. The Basic Law was China's first authoritative code on corporate internal management as well as Nanhainan's first systematic thought on culture, values and future strategies. It was amended eight times by six professors and took three years to finish. The Law contained the company's aim, basic business policies, basic organization policies, basic control policies, amendment to Basic Law, etc., and problems that might arise in relation to each aspect. It was the basic guide that governed the behavior of Nanhainan's staff and set the direction for the company's corporate development.

In 1995, Nanhainan formulated the Measures of Nanhainan for IAM which defined concepts like intellectual property, patent, service invention and technical secrets. It specified the organizational structure of IAM, patent application and protection, trademark naming and registration, computer software protection, protection of non-patented technologies and business secrets, licensing trade of intellectual properties, appraisal of intangible assets and rewards and penalties. Nanhainan also came up with documents like the "Interim Regulations of Nanhainan on Rewarding Achievements in Scientific Research" and "Interim Regulations on the Management of Personnel Accessing Sophisticated Technologies, Business Secrets and Kernel Management Secrets."

Nanhainan established the intellectual property information management system involving the collection, analysis, development, and use of patent documents and information, and established the corporate intellectual property management information platform. In the case filed by Cisco, Nanhainan responded quickly, found Cisco's products through the existing retrieval system, concluded through analysis that the technical characteristics of its existing patents differed from those of Cisco's, and confirmed by hard evidence that there was no infringement on Cisco's intellectual property. In effect, Nanhainan's intellectual property information management system played a significant role in winning the case.

To internationalize its management systems, Nanhainan adopted comprehensive and advanced international management systems, including the Position and Salary System from an internationally famous HR company - the Hay Group, the Integrated Product Development (IPD) and Integrated Supply Chain (ISC) from IBM, and the

corporate vocational qualification management system from the National Vocational Qualification.

Corporate Culture

Nanhainan developed its corporate culture according to what the company needed to steer it through its various stages of growth. It valued the "wolf culture" of advancing fearlessly during its founding stage and the "mattress culture" of working around the clock during its growth stage. As the company matured and experienced steady growth, it adopted the core values of focus, innovation, steadiness and harmony which formed part of the "human culture."

In adopting the "wolf culture," the president of Nanhainan summed up the wolf's advantages as its acute sense of smell, dauntless attack and solidarity. It was the wolf's spirit that guided Nanhainan's innovations and opened a path for the company in the domestic and international electronic communication industry. Adopting the "mattress culture," on the other hand, meant placing a mattress in the office for overnight R&D, highlighting Nanhainan's concept of time efficiency and struggle.

Both cultures played a significant role in motivating employees and rapidly developing and seizing markets during Nanhainan's founding stage. However, the after-effects of the "wolf culture" were reflected in cutthroat competition and lack of care for employees, which affected the mental health of some employees who were subjected to heavy work pressure. In its "Social Responsibility Report 2008," Nanhainan established the post of chief staff health and safety officer to further improve the plan for staff security and vocational health. Thus, Nanhainan launched the process of shifting from a "wolf culture" to a "human culture." The adaption of the organizational structure to corporate internal and external environmental changes played a significant role in creating the "soft" environment for IAM.

Conclusion

Nanhainan's IAM became its core competitive edge in its domestic and foreign business environments and built up the company's capacity for sustainability. It was mainly reflected in the creation, management and transformation of intellectual assets while its support capacity for IAM was reflected in its leadership, human resource management, internal management system and corporate culture. Nanhainan's experience in building up its IAM capacity would be useful as a reference for medium and small-sized enterprises entering the international supply chain with intellectual assets as their major business resource.

Exhibit 1. Milestones in Nanhainan's Development

In 1988, Nanhainan was founded by its president with a registered capital of RMB 20,000 in Shenzhen, China.

In 1995, the intellectual property department and Beijing R&D Center were established.

In 2000, Nanhainan achieved contract sales of over USD 2.65 billion and overseas sales of USD 100 million. Its international sales increased by 68% from USD 328 million in 2001 to USD 552 million in 2002 (Global investments in telecom infrastructure decreased by 50% within the same period).

In 2003, Cisco Systems charged Nanhainan for infringing part of its technical patents but finally withdrew the petition and reconciled with Nanhainan.

In 2004, Nanhainan was given the "Most Promising Asia-Pacific Enterprise 2004" and "Asia-Pacific Broadband Equipment Supplier 2004" awards by Frost & Sullivan.

In 2007, Nanhainan ranked among the world's top five telecom equipment distributors.

In 2008, Nanhainan achieved global sales of USD 23.3 billion, up by 46% year on year.

Exhibit 2. Nanhainan's Annual Contract Sales, Overseas Sales and Number of Patent Applications

Year	Global Contract Sales(Billion Yuan)	Overseas Sales (Billion USD)	Number of Patent Applications
1995	1.5		
1996	2.6		
1997	5.0		
1998	8.9		
1999	12		
2000	21.9	>0.1	
2001	25.5	0.328	1021
2002	21.2	0.552	2154
2003	31.7	1.14	>4155
2004	46.2	2.28	>6500
2005	65.6	4.75	9600
2006	86.9	7.15	14643
2007	123.2	11.5	26880
2008	158.4	17.5	29666

Exhibit 3. Nanhainan's Global Contract Sales, 1995-2008 (in billion yuan)

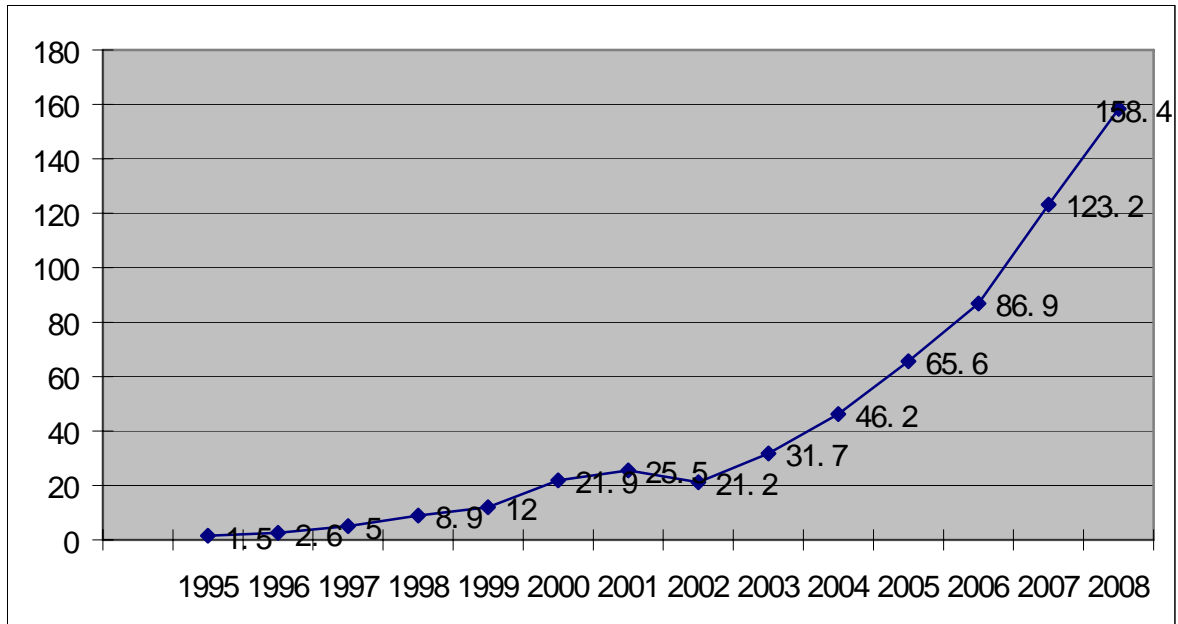


Exhibit 4. Nanhainan's Overseas Sales, 2000-2008 (in billion USD)

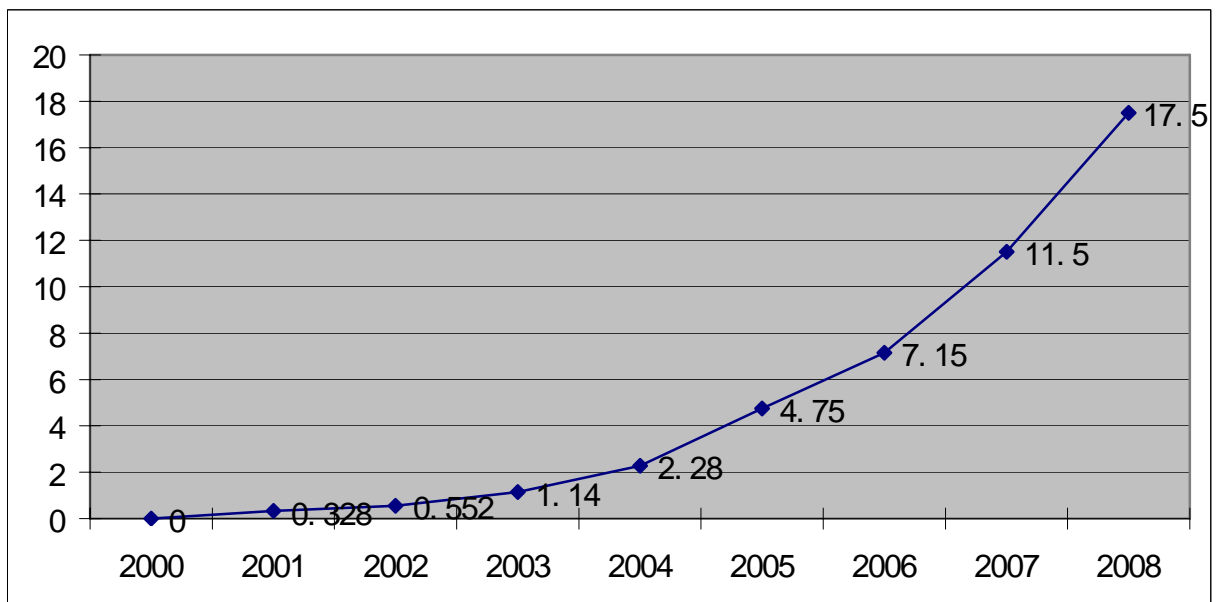
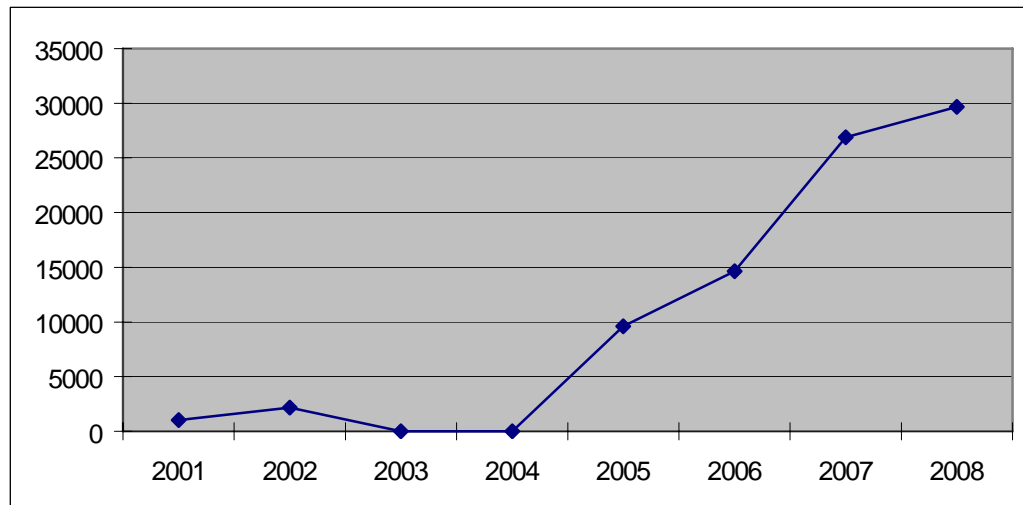


Exhibit 5: Nanhainan's Number of Patent Applications, 2001-2008



References

NHN Basic Law

"NHN will transfrom 'wolf culture' to 'human culture.'" 19 June 2009, Accessed from <<http://www.dahe.cn./>>

Zhaoxin, "NHN's experience in building strategic human resource planning." *Enterpriser World*, April 2007.

Zhong Mengguang, "The management of NHN's R&D." *Human resources development*, July 2005.

Wu Zhiqiang, "Thinking on the Human Resource Management of NHN Technologies Co. Ltd." Master graduation thesis at Xiamen University, September 2001.

Chinese Academy of Personnel Science, China Law Association on Science and Technology, State Intellectual Property Office of the People's Republic of China. "A Study of China's Intellectual Property Management Engineer Professional Qualification System." November 2008.

Cheng Dongsheng, Zhu Yuerong, "Management Wisdom of China's Most Outstanding CEO." *Zhejiang People's Press*, April 2008.

Wang Li, "Research on the knowledge transformation system of high technology company." Master graduation thesis of Xi'an University of Techology, September 2006.

Yuan Juan, Song Yushui, "Intellectual property talent management and development." *Intellectual Property Press*, March 2008.

