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Chinese Company's IPR Strategy: How Huawei Technologies Succeeded in Dominating Overseas Market by Sideward-Crawl Crab Strategy

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Abstract--Chinese companies are expanding its patent application. Having been a licensee of intellectual property right for a long period of time, they are trying to transform themselves as a creator of their own technologies and patents. Their purposes are to escape from status that their R&D are dominated by patent of MNEs overseas and avoid payment of license fee. In this paper, we take Huawei Technologies as an example, to follow their path to one of the world's biggest patent applicant and the way to China's largest IT company. Their strategies are; 1) Focusing on peaked out technologies and provide abundant output 2) Supplement their technology and patent by collaborating with their rival company and by M&A. 3) Targeting market in developing countries in order to establish de facto standard. Their strategy and success traced a different way from other developing country's way. In this thesis, we call it "Sideward-Crawl Crab Strategy" and present the way for the developing countries company at starting stage to develop and win among dominant MNEs.

I. INTRODUCTION

Chinese companies has long been regarded as latecomers for international technology competition for being isolated from international trade and investment during their socialist-economy era from their 50s to 70s. Especially, in IT industries, their attempt to build up their own main frame based on Chinese character for security reason isolated themselves from international trends of technology development.

After Chinese government turned open-door policy in 1978, Chinese companies which had suffered from inefficiency and huge stack of inventories, were expected to introduce foreign technology through joint venture, in exchange for their huge domestic market and cheap labor, in order to bring up their competitiveness and decrease deficit derived from it.

What was different about Chinese company from Asia's runner country in the 80s, as Japan, Korea, Taiwan was that their domestic market was huge and it has less incentive go for overseas market [2][3].

It was limited area like Shenzhen in Guangdong Province, which was designated as special economic zone aiming to follow the path of Newly Industrialized Economies or Korea, Taiwan, the countries developed by introducing foreign technology and production lines, had a luck to export their product to foreign market and importance of technology introduction and foreign market was understood, but chance was given for limited entrepreneurs.

It's not coincident that Huawei Technologies and ZTE, two biggest and successful and competent China's telecom company in overseas market are both located in Shenzhen,

the city shined as Special Economic Zone in the 90s.

Traditional corporate development pattern follows : 1)Introduction of Foreign Technology and Capital, 2) Import-substitute Industrialization, 3)Export-oriented industrialization, production of non-brand goods or production on OEM (Original Equipment Manufacturer) basis, 4)Building your own Brand etc [1].

Most of successful Chinese multinationals, like Lenovo, has skipped filling in domestic market, and went directly to developed countries by collaborating with world's major companies[6]. This was called by many researchers, "leap-frog strategy"

What was different about Huawei was, their target, at least in a beginning stage, was developing countries whose GDP per capita was same as China or lower. And by gaining experience, success, and fund, the company is walking toward success.

II. HYPOTHESIS

In this thesis, following hypothesis is to be proved:

A. Targeting market in developing countries which the company can apply its low-cost, non-brand product sold in domestic market is effective way to develop.

Comparing to other Chinese company's "leap-frogging strategy" [6], Huawei avoided developed countries market and first developing countries surrounding them. We take crab which walks sideward and go very far away without noticing anyone as an example, name Huawei's strategy as "Sideward Crawl Strategy".

B. Focusing on patent on peaked-out, or suitable-to-developing-country's needs is new critical points to expand their business through developing countries market before they move into developed countries market. Lots of companies has suffered from lack of brand and technology in developed country's market, even after they were quite successful in their domestic market. Adopting leap-frog strategy is not always promising and going into the market of similar economic level is preferable.

III. METHODOLOGY

A. Patent Data Analysis

In this thesis, we stand on the point that patent application is a expression of company strategy, showing the field which the company seeks to secure a temporary monopoly on a certain technology [4]. So we focus on a patent following field:

- Packet Switching Systems (IPC H04L 12/56)
- Systems Provideing Services or Facilities to Subscribers (IPC H04M 3/42)
- Long Term Evolution (LTE)
- WiMAX
- Next Generation Network (NGN)

B. Observation of corporate history and strategy on collaboration

Chinese companies are under government support, but not all the company has been successful [10]. This is because of difference in their corporate strategy, that is judgment of corporate leaders. By following the path and leader's decision, one can figure out key of their success.

IV. HUAWEI TECHNOLOGY

Huawei Technologies was established in 1988 and it is one of the world's fast growing company which made an annual sales of 18.3 billion USD in 2008, quadrupled from 3.8 billion in 2004 (Fig.1). It exceeded once one of the biggest telecom equipment manufacturer, Nortel Networks which made mere 6% growth to 1.4 billion USD, the company filed for bankruptcy in January 2009.

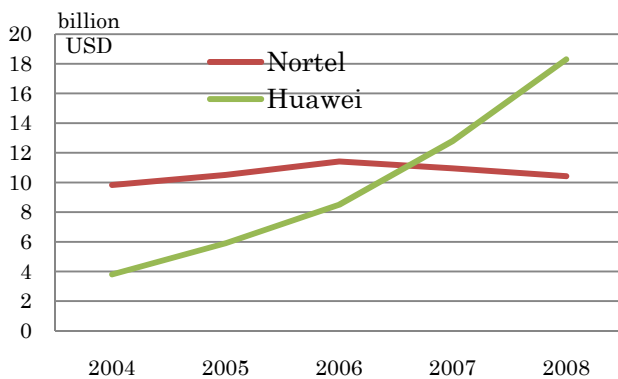


Fig.1 Annual Sales of Huawei and Nortel

Huawei is famous, not only for its fast growth, it is known for topping world's patent application in 2008. Its application has soared since 2004, and in the year 2008, it has made 1904 patent application according to WIPO data, which is about 20% more than Ericson which is 2nd largest in the industry and the number is almost 14 times as much as regarded-rival, Cisco technologies.

Huawei Technologies was established as a third-party reseller of telecom devices in Shenzhen city, Guangdong province in 1988 with registered capital of RMB 20,000 (approximately USD 2,000). Five years later after its establishment, it has won reputation by launching large-scale digital program-control switch "C&C08 digital telephone switch" by independent design and development [10].

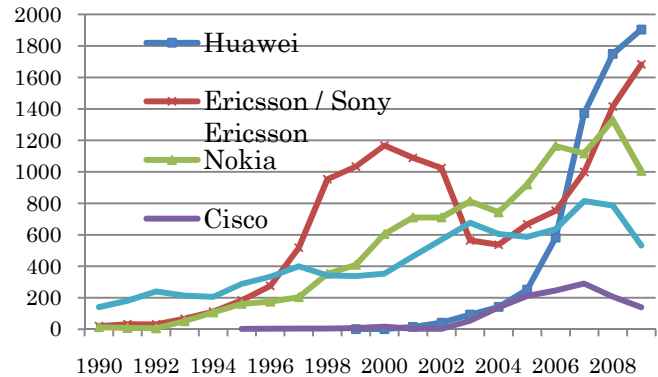


Fig.2 Patent Application by major telecom equipment manufacturer

Mr. Ren Zhengfei, a former People's Liberation Army (PLA) officer When they launched C&C digital telephone switch, Mr.Ren's strategy in order to stride into China's domestic market which was dominated by foreign MNEs, followed Chinese revolutionalist Mao Zedong's traditional Chinese strategy "encircling cities from the countryside."

They were not satisfied by the success in domestic market, and decrease of telecom investment from mid 1990s, and world's major company's coming into Chinese market made them made them turn their eye from develop-by-your-own to collaboration. "[8].

Before going into overseas market, its management style was made under consultancy of IBM from 1998 to 2003, especially in the field of R&D and supply-chain management, and reorganized themselves as IT solution vendor from mere hardware wholesale company. And it survived through collapse of IT bubble in the beginning of 2000s, by the advice from IBM consultant, they 1).increase profits through better supply-chain management, 2). stronger R&D and a more integrated corporate structure.[8]

What was different was they went into directly to developing countries' market which favors low-cost, wireless, mobile network as Chinese local market does.

According to Zhu[10], Huawei's internationalization process in divided to following stages:

Tentative Stage (1996-1999)

Huawei's first contract with overseas company was made with Hong Kong's Hutchison-Whampoa not only provided low-cost advantage, but offered flexible solutions gear to new generation communications business environment. This success in overseas business turn Huawei management's eye to developing countries experience. In the year 1997, they established joint venture with Umberto Konzern Russia as it is shown in Table1, the same year that they entered Russian market, and with set up joint venture in Brazil. In 1998, they entered Yemen and Laos through international bidding, and in Africa, started business in Kenia, winning the market with reputation of preferred low-cost, yet high-quality

mobile-network builder. Huawei's former head in West Africa, witnesses that "It's profit margins in Africa can be up to 10 times greater than those in China." [8], and start recognizing importance of overseas business.

Take-off Stage (1999-2001)

In 1999, Huawei has launched "New Silk Road" marketing initiative and "started all kinds of international expositions and invited overseas customers to China and Huawei campus in Shenzhen to get a direct impression of China's economic reform progress." [10].

It was only one year after they went into metropolitan area in China, and it means they chose to go abroad where clients can't afford expensive equipments offered by European and US companies, and the promised land of no rivals, rather than going to China's urban market, compete with world's majors, and exhaust themselves in technology wars.

In the same year, 1999, it entered market in Thailand, Singapore, Saudi Arabia, South Africa, Egypt etc and by the year 2001, it established branch offices in over 40 countries its international sales reached 12% of total sales [5].

There are three strategies which is different from their rivals.

One is price. It was 5 to 10 percent lower than the rivals such as Ericsson and Nokia to avoid reputation of being cheap and low quality.

And the second is relationship building ethics in Africa. It established local training centers in countries as Nigeria, Egypt, Tunisia, Angola and Guinea which altogether trains 2000 people yearly. Building center has created local employment which back up local government to utilize Huawei equipment and maintenance service for long.

The third is introduction of ecological and power saving equipments which operates with solar and wind energy. It was welcomed not only by providers in Africa, but later by European providers.

Now Mature Stage (2001-)

Huawei entered European market in Germany for Synchronous Digital Hierarchy (SDH) system in 2001, formed joint venture with Nokia Siemens Networks for TD-SCDMA, established European Headquarters in London in 2004.

British Telecom designate Huawei as provider of Multi-Service Access Node (MSAN) and optical transmission, and in 2006, Vodafone selected Huawei to build the radio access part of its UMTS/HSDPA (High-Speed Downlink Packet Access).

Cooperation in R&D field is also a biggest characteristics in this period. During this period, Huawei has established 10 R&D centers with Texas Instruments, Motorola, IBM, Agere Systems, Sun Microsystems, Microsoft etc.

TABLE 1. HUAWEI'S HISTORY OF ALLIANCE

Date	Partners	Country
1989-1994	Shanghai Bell Telephone Manufacturing Company	Sino-U.S. JV
20 Feb. 97	Texas Instruments	USA
9 Apr. 97	BETO TELEKOM	Russia
26 Aug. 99	Fujian Provincial Mobile	China
8 Jun. 00	Qualcomm	USA
27 Nov. 01	NEC, Matsushita Commun	Japan
21 Oct. 02	Agere System	USA
21 Oct. 02	Microsoft	USA
23 Oct. 02	NEC, Matsushita Commun	Japan
19 Mar. 03	3Com	USA
4 Jun. 03	Avici Systems	USA
29 Aug. 03	Siemens Info& Common Mobile	Germany
16 Sep. 03	Infineon	Germany
12 Feb. 04	Nokia Siemens Networks	Germany
25 Apr. 05	Intel	USA
2 Mar. 06	HP	USA
31 May. 06	Freescall Semiconductor	USA
25 Jul. 06	Motorola	USA
13 Feb. 07	Qualcomm	USA
14 May. 07	Global Marine Systems	UK
21 May. 07	Symantec	USA
31 Oct. 07	International Telecommunication Union	Organization
1998-2003	IBM	USA
12 Dec. 08	Microsoft	USA
20 Mar. 09	Infineon	Germany
9 Aug. 09	Sun Microsystems	USA

Source: [5], [9], Various press release

But in the US, it has experienced lawsuit with Cisco Systems in 2003, under suspect that Huawei infringed Cisco's patent, which ended with compromise Huawei withdrew all the products sold in the US market.

V. PATENT APPLICATION ANALYSIS

In this chapter, we stand on the point that patent application is a expression of company strategy and direction, and shows, indirectly though, management's mind toward pushing them into the market, and here, we'd like to focus on new technologies that is in the focus in R&D technicians .

A. Packet Switching System and LTE

Huawei is offering packet switching system which providers can built on a current platform, and simply loading new software, the system can be upgraded to support to the new functionality of LTE (Long Term Evolution), the technology stand in the middle of present 3G and next 4G. Since present CDMA2000 and W-CDMA requires payment of patent license fee, 3GPP, standardization organization, advocates and calls for enabling low-cost, high-speed data transmission. LTE was firstly established communication with big paquet. And it is widely used by provider as T-Mobile Austria [7].

Fig 3 shows the trend of patent application by world's leading telecommunication equipment manufacturer in packet switching systems (IPC-International Patent Classification

H04 L12/56) in WIPO (World Intellectual Property Organization) and Fig.4 shows patent application on LTE. We can observe that Huawei is leading the industry among European and US Major companies.

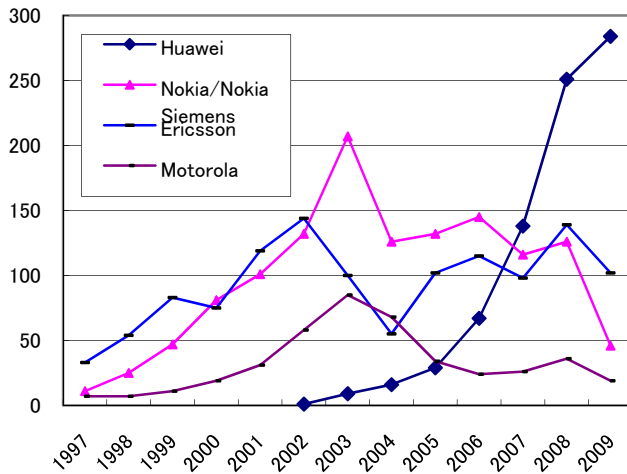


Fig.3 Patent Application on Packet Switching Systems (IPC H04L 12/56)

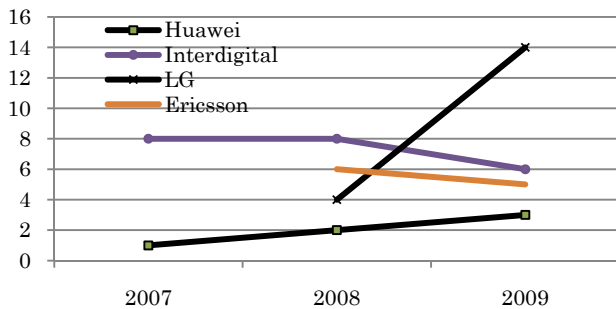


Fig.4 Patent Application on Long Term Evolution (LTE)

B. Systems Providing Services or Facilities to Subscribers (IPC H04M 3/42)

Huawei is making heavy on responding developing countries needs as sending packet at low-cost, or offering new system concerning to provide music at cheap price via mobile phones.

Same trend can be seen in the field of “Systems Providing Services or Facilities to Subscribers (IPC H04M 3/42) (Fig.5)

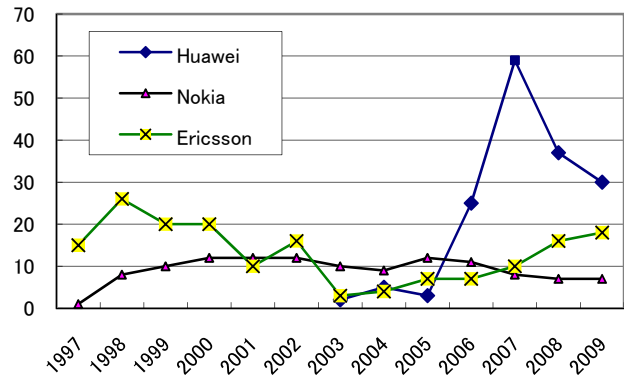


Fig.5 Patent Application on “Systems providing special services or facilities to subscribers” *IPC H04M 3/42

C. WiMAX

WiMAX, or Worldwide Interoperability for Microwave Access, is a technology that realize high-speed wireless internet. It enables everyone to make access everywhere. Huawei is targeting to become leader in the industry, but application from ZTE, Huawei’s rival in China is expanding its application.

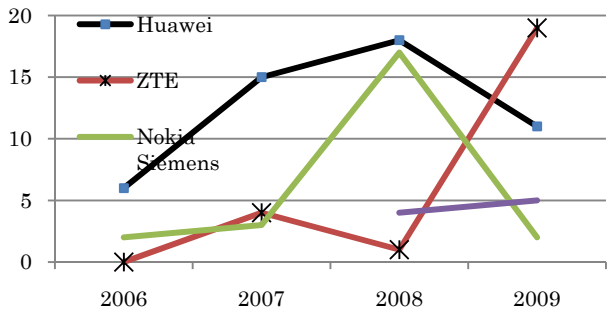


Fig.6 Patent Application on WiMAX

D. Next Generation Network

Next generation network (NGN) is a technology of packet-based network which provides services to make use of multiple broadband, and it offers unrestricted access by users to different service providers. It supports generalized mobility which will allow consistent and ubiquitous provision of services to users. Huawei has been a leader in patent application for past 5 years, although the number is exceeded by its Chinese rival, ZTE.

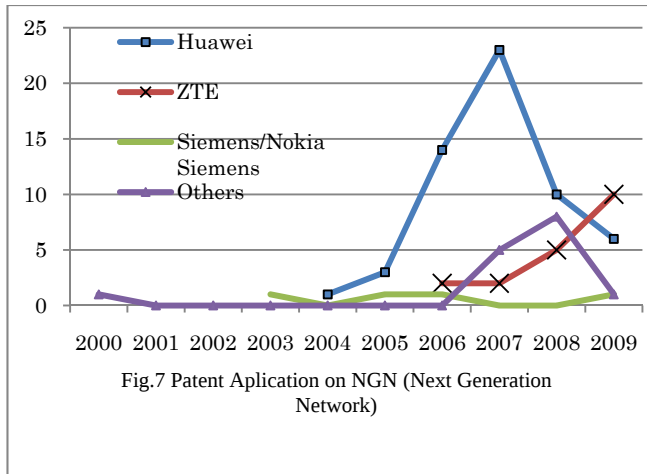


Fig.7 Patent Application on NGN (Next Generation Network)

VI. CONCLUSION

From above analysis and observation, we can see Huawei's development path is far different from other Chinese companies.

Huawei is one of only two telecommunication equipment company (the another one is ZTE, also based in Shenzhen city, Guangdong Province) from developing countries that actively files patent. For lack of examples, it is hard to say success path of Huawei is applicable to all other companies in developing countries, but at least, we can say company can go into market which can't afford high-cost equipments that is provided by European and US companies by taking sideward-crawling Crab strategy.

Concerning to patent application strategy, a company can file patents in the field that other MNEs gave up filing, and take by taking their place, it can go into developing country's market which promises high profit and monopoly, for MNEs seldom go. And in the case of Huawei, by experiencing market needs which requires low-cost and simple system that few revision is needed, later matches needs of developed nations, as it is shown from the examples of T-Mobile

Austria.

One thing should be solved is that despite huge and eager patent application, Huawei's number of assigned patent is much smaller than rivals and its sales is about half of its rival Cisco Systems which recorded 36.1 billion USD in 2009. Just as Japanese company, it is suffering problem that "high application does not result in profit". Whether Huawei is making inefficient application or their high application could contribute to their future success is to be solved.

REFERENCES

- [1] Baldwin, R.E.; "Trade and Employment Effects in the United States of Multilateral Tariff Reductions," The American Economic Review, Vol. 66, No. 2, pp. 142-143, 1976.
- [2] De Woskin, K.; "The WTO and the Telecommunications Sector in China", The China Quarterly, No167, pp. 630-654, 2001.
- [3] Fan, P; "Catching up through developing innovation capability: evidence from China's telecom equipment industry", technovation, 26, pp. 359-368, 2006.
- [4] Frietsch, W. and J. Wang; "Intellectual Property Rights and Innovation Activities in China: Evidence from Patents and Publications," Fraunhofer ISI Discussion Papers Innovation System and Policy Analysis, No.13/2007, pp. 9, 2007.
- [5] HuaweiInterview, http://www.huawei.com/corporate_information/milestones.do.
- [6] Lazonik, William, "Indigenous Innovation and Economic Development: Lessons from China's Leap in to the Information Age," Industry and Innovation, Vol 11, pp. 280-283, 2004.
- [7] Mobile Europe, "T-Mobile deploys Huawei's Intelligent Packet Network in Austria", Retrieved03/03/09,WorldWideWeb,http://www.mobileeurope.co.uk/news_wire/114652/T-Mobile_deploys_Huawei%E2%80%99s_Intelligent_Packet_Network_in_Austria.html
- [8] O'Brien, K.; "From China, a global player in technology; Huawei now ranked 2nd in selling equipment for mobile phone", International Herald Tribune, November 30, 2009
- [9] Zhang,Y.; "Alliance-based Network View on Chinese Firm's Catching-up: Case Study for Huawei Technologies Co.Ltd.," UNU-MERIT Working Papers,ISSN 1871-9872,2009
- [10] Zhu,B.; "Internationalization of Chinese MNEs and Dunning's Eclectic (OLI) Paradigm: A Case Study of Huawei Technologies Corporation's Internationalization Strategy," pp. 56-57, 2008.