Marketing Strategy and China's Software Industry

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This paper endeavors to analyze the marketing strategy in China's software industry as well as its current status and development. Our sample size covers the period from 1990 to 2012. Even though Chinese software industry is still at its beginning stage, our results show that the industry enjoys competitive advantages and is up to the task of defending its-self against market forces. After performing some regression analysis, we find that the government influence had a greater effect on the growth of the software industry as compare to the enterprises own promotion mechanisms. Furthermore, the production capacity forecast of China's software industry (from 2005-2012) presented in this study shows that the industry will experience a significant level of growth over the next two years. Notwithstanding, the Chinese software industry continues to face serious challenges which include but not limited to: immaturity of software users, language barrier, government emphasis on the hardware sector, leaving the software sector with individuals rather than an aggregate process, lack of intellectual property rights protection , etc.

Keywords: market, marketing strategy, software industry

1. Introduction

The world software industry has been developing very rapidly in the past several years According to Arora and Athreye. Although the software industry contributes less than 1% of India's gross domestic product (GDP), it has accounted for more than 10% of the growth of that GDP. The most recent statistics provided by the National Association of Software and Service Companies (NASSCOM) of India indicate, "The [software] industry is gaining significance in the Indian economy with sustainable growth rates, increased contribution to FDI, employment and exports. This industry has led to wealth creation of about US$18.9 billion in the last six years and is expected to attract cumulative FDI worth US$1.2 billion by 2005." According to the projection of NASSCOM, by 2008, India's software industry will employ 4 million people and will account for 8% of GDP and 30% of foreign exchange earnings.

China is emerging as one of major markets of software outsourcing services. According to the latest survey reportreleased by Gartner, Chinese software outsourcing earnings is expected to catch up that of India in 2006 with theexport of software developmentservice to 27 billion dollars. If this trend continues, Chinawill become a major competitor in the global outsourcing market. Besides this, China is also asoftware

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consuming market with a population more than 1.3 billion and more than 15,000 middle-size and smallsizedomestic firms, which are adapting to the world market particularly since China became a member of WTO.

The main objective of this research is to therefore analyze the current status of the Chinese software industry. In particular, we ask if the industry is up to the task of defending its-self against market forces and whether the government influence has made any positive impact.

The rest of the paper is organized as follows: Section 2 considers a review of the literature. Section 3 describes the Chinese software market. Section 4 addresses some problems affecting the industry. Section 5presents the data and solution. Section6 concludes.

2. Literature Review

Research on the topic of the China software industry by foreign scholars is very limited. Current research concerning this issue points out that the China software industry is in a primitive stage, and its driving force includes a large human resource pool, huge demand born from fast growing domestic economy and the government's promotional policies (Li & Gao, 2003). The comparison of China software industry's competitiveness with India is also a hot issue in this area; the related research making assessments of growing competitiveness of China's software industry point out the role of government policies in shaping the competitiveness (Yang, Ghauri & Sonmez, 2005). Research in progress by domestic scholars focuses on the model of governance under outsourcing supply by Chinese local enterprises and conclude that Chinese software outsourcing supply still stay at mid-low end of value chain concerned and involvement in innovation alliance partnership with outsourcing buyers as a key road for upgrading (Liu & Xiao, 2011). Thus, current research in progress points out China software industry is an increasing power in software industry worldwide, and gives description of industry's overall growth and development. While limited research is put on detailed survey on industry development from regional level so far. Our paper will contribute to the literature by seeding to address the current status of the industry in the framework of the government influence.

3. Chinese Software Market

3.1 Overview of the Market

China launched a program of software industry development in the 1980s, almost concurrent with India. But clearly, after two decades of development, the Indian software industry has surpassed China on many accounts. In terms of Indian rupees, the compoundannual growth rate (CAGR) of India over the past years has been as high as 62.3%. In 2000–2001, the software industry in India was worth US$8.4 billion, of which domestic sales and software exports were US$2.2 billion and US$6.2 billion, respectively. As a comparison, China's software industry was worth US$6.8 billion, with

only US$0.4 billion of exports in the same period. Clearly, the Indian software industry has adopted an export-oriented approach whereas China's software export is negligible.

Although it is natural to link the vast gap in the two countries' software exports to the inherent language advantage of India, linking the software sector to the other ICT market segments might give us a different explanation.

The following analysis indicates that one of the major reasons for China's relative slower pace of development of its software sector might be the skewed efforts toward the hardware sector in the ICT industry, and there has been no clearly formulated NASSCOM.

According to Suman & Yogesh, this market is divided into three main segments namely: theplatform software,the intermediatesoftware as well as the application Software. Thefinancial management software which is also a branch of the application software also startedin China at that time. This market (financial software) grew very rapidly andincreased in size tremendously. By the year 1996, the market sales grew up to 650 million and further increased to 780 million. Due tothe rapid development in the Chinese economy, the rules of the game have changed and thus making the financial softwaremore complicated than what it used to. The initial goal of financialsoftware requirement has moved from the basic application for reducing accountantburdensome work to the assistant role of market analysis. At the beginning, only thedomestic financial software was allowed by the Chinese tax office. Soon after Chinabecame a member of WTO, the Chinese financial software market is opened toforeign companies.

Therefore, the competition in the market has been noticeablyincreased due to the permission of using congener for Enterprise Resource Planning (ERP) software isa business management system that integrates all factors of the business, includingplanning, manufacturing, sales, marketing and etc. As the ERP methodology hasbecome more popular, software applications have emerged to help businessmanagers deploy ERP in business activities such as inventory control, order tracking,customer service, finance and human resources.

3.2 Analysis of the Market

Even though China exports of software are very little, the country enjoys a very large domestic market. In the year 2000, the total output of Software services reached up to 54%; amounting to 3.9 billion United States Dollars. On the other hand, the total software product was 40% of total output the same year which amounted to 2.9 billion United States Dollars. It is interesting to note that application software such as, security systems, electronic publishing as well as educational products dominates the market and constitutes up to65% of total sales.

Despite several weaknesses, the high industrial growth in China's software industry continues is no doubt a great advantage to the country. As a matter of fact, an average annual growth rate of over 30% from 1992 to 2000 was achieved. According to the

International Data Corporation (IDC) forecasts, the Chinese software market continues to grow at a compounded annual growth rate of over 30% between 2000 and 2005.

However, the industrial output of 7.2 billion USD in 2000 remains relatively small. Figure 1 shows the size of China's software market over the period from 1992 to 2000 in millions of RMB.

Statistics provided by IDC shows that the end of 2000 saw more than 2000 registered software companies in China. From 2000 to present, more than 3000 more software companies have evolved. Another survey conducted in 2001 by the Chinese Ministry of Information along side with China Software Industry Association (CSIA) records that there are over 10, 000 software companies in China now. On the contrary, thousands of these firms are small enterprises with fewer than 50 employees who lack economies of scale or distinctive competencies. It is interesting to note that only a few of these domestic companies have gained control of particular product niches and have more than 1,000 employees or sales revenues over 50 million USD. The software product market in China is dominated by foreign cooperation's like Microsoft, IBM, etc So far, the successes of domestic firms in the software product market have been very limited. Whether or not China has a well defined Software industry is an issue that remains to be debated.

3.3 Current Development

With the rising product output, China's software industry continues to enjoy a rapid development. The national industrial policy encourages the industry to develop towards the direction of hi-tech products. At the same time, domestic investment is gradually increasing. As investors pay more attention to the software industry, the market demand for different researches is also on the increase.

The period 2009-2012 is crucial for the development of China Software industry. This period is also the transitional period for China stepping from the "11th Five-Year Plan" to the "12th Five-Year Plan". In the context of global financial turmoil and severe domestic economic situation, a series of new policies are about to be introduced which will undoubtedly have a significant impact on the development of Software industry. A number of major national construction projects have started to be constructed which are bound to play an important role in driving the demand for Software. According to an annual report, Wen Jiabao, Premier of the People's Republic of China, hosted the Executive meeting of the State Council in November 5 2008 to study the strategy of furthering domestic demand and promoting a stable and rapid economic growth. 10 measures to further the expansion of domestic demand and promote economic growth were confirmed at the meeting. According to preliminary estimate, by the end of 2010 the investment required for the implementation of the above projects will be at about 4 trillion yuan. TheProduction capacity forecast of China's Software industry from 2005-2010(Figure 3shows the plot of this scenario) reveals that the industry will experience a significant level of growth over the next two years.

3.4 Labor Supply and Marketing

It is obvious that the software industry in China suffers a huge shortage of professionals. However, the 1990's witness a tremendous increase in the number of post-graduate degrees in the fields of science & technology. The number of doctorates granted in China increased by 240% from 518 to 1247 between 1995 and 2000. The IT market also reached 560 million RMB in 2001. 25% of this number constituted IT software training. According to China Software Industry Association, the year 2002 witness up to 330,000 professional programmers. The number of technicians was 180, 000. Notwithstanding, there is still a serious need for increase in the number of university trained technician. Figure 2shows the data of the number of science and engineering doctorates granted degrees by universities in China over the period 1989 to 2000. One philosophy of the company is to satisfy consumer needs at a profit. For the branded products, the seller is able to identify the market, design the products, and position in the targeted market.

Prices play a very important role in the marketing mix and have a strong influence on buyer's decision. In China, the same situation is true. Interview with some key stakeholders reveals that a reasonable price for quality product is a top factor that influences the Chinese customers' decision. It is obvious from primary data as well as public opinion that that the Chinese software industry charges a very reasonable price.

However, many customers still think that the prices are not flexible, and that discount rates are not attractive. Our secondary data on the contrary show that these prices are flexible. This is attributed to the high rate of piracy and the relatively low technological product. These factors make it possible for a very flexible price. As a result, there are less challenges and pressure for the Chinese software marketing departments to improve their domestic customers' satisfaction in regards to flexible prices but the market share internationally is smaller.

The industry takes advantage of the public trust and uses such trust to promote its products and services. The industry enjoys a strong relationship with the Chinese tax office. As a matter of fact, the industry products and services are mostly recommended by such tax officers. In other words, we can say that the government serves as the major promoter of the industry as opposed to the industry own advertisement and promotion.

4.Problems affecting China's Software Industry

4.1. General Problems Affecting Most Software Industries

Before discussing the specific problems affecting China's software industry, we would firstly outline the general problems affecting most software industries in the world including India. According to Michael E.Porter, thefactorswhich help people identify the sources ofcompetition in an industry can be classified into five. These five forcesare: Threat of Entrants, Buyers' Bargaining Power, Threat of Substitutes,

Suppliers'Bargaining Power, and Rivals' Capability in Competition, which are governing thecompetition in an industry.

4.2 Problems Affecting Chinese Software Industry

4.2.1 Immaturity of Software Users

According to public opinion, one problem that affects the Chinese software industry is the situation that most users including the government lack the maturity to understand the usage of thee software. Most business firms lack the requisite management structures and are not sophisticated enough to make balanced and independent decisions. These software users which range from government to businesses to firms need to have a better understanding of the software they use so as to help China develop this industry better and faster.However, our secondary data show a tremendous increase in the number of post-graduate degrees granted in the science and engineering fields between 1995 and 2000.

4.2.2 Lack of Intellectual Property Rights

Perhaps an even more fundamental factor lies in the deeply rooted notion that software is an attachment to the hardware and should be a free product. The lack of intellectual property rights protection on the government side also contributes to the low spending on software, which further hinders software arms' incentives to innovate.China is ranked second in the world with a 92% software piracy rate. This statistics reveals a high immaturity of the Chinese software market. Recent survey shows that 25% of respondents consider unauthorized copying, sharing, as well as installation to be a significant factor behind Chinese software industry growth.

4.2.3 Government Emphasis on the Hardware Sectors

As a matter of fact, one of the major reasons for the underdevelopment of China's software exports is due to government policy. The government has diverted most of its attention to the hardware sector while the software sector is left with relatively little attention. Because of this reason, less research in the area is carried out due to the lack of adequate availability of resources. To be more precise, the software industry lacks a clear national vision.

4.2.4 Individualism Rather Than Aggregate Process

With respect to the industry level, software development has been regarded as the art of individual creativity rather than an engineering process. As a result, the importance of quality and standards; the two important critical factors in software development, have been largely neglected.

4.2.5 Language Barrier

The fact that language barrier poses a serious challenge to the Chinese software

industry is an issue that needs not be over emphasized. China has a very large market and as such attracts different customers from diverse backgrounds and cultures. Many of these customers do not read or speak Chinese. This sometimes leads to serious negotiation problems.

5. Data and Solution

Having discussed some problems in the Chinese software industry, we now move ahead to addressing the solutions. In order to develop China's software industry, strategies at the national level, the industry level, as well as the firm level needs to be taken. We therefore suggest three models to handle these issues namely: government model, industry model, and firm model. The data used in this study were collected through interviews and firms annual reports. The regression results would be made available upon request.

5.1 Government Model

From our study, it is obvious that the government has played and continues to play a very important role in China's software industry. As a result, we want to estimate the impact of such influence on the general growth of the industry. Let GPM be the variable that captures government promotion mechanism in the industry. Let FPM be the variable that measure firm's promotion mechanism. We want to estimate the equation $Y = \beta_0 + \beta_1 GPM + \beta_2 FPM + \varepsilon$. In this regression equation, Y represents the growth in the Chinese software industry while ε represents the unobservable. After estimating the parameters, we find that both parameters are positive except that β_1 ishigher than β_2. This means that the government promotion mechanism played a higher role in the growth of the software industry relative to firms own promotion mechanism. Therefore,the government needs to make use a broad set of favorable policies to foster the industry, including investment in economic infrastructure, investment in both hardware and software equipment, and reduction of tariffs and taxes.

5.2 Firm Model

Our regression analysis in the government model shows that enterprises promotion mechanisms had a positive effect on the growth in the software industry. Therefore, Chinese enterprises need to be more innovative and exhibit the ability to identify growth markets and to access necessary inputs. In order for Chinese firms to ensure competitiveness, the issues of standardization and reputation for quality needs not be over-emphasized. As a starting point, China's software industry needs to build a firm foothold in the domestic software service. The need for China to build alliances and collaboration with other foreign software superpower is also important for the growth of china's software industry.

Like NASSCOM in India, the China Software Industry Association (CSIA) needs to play a more important role in China's software industry. One way this can happen is by contributing a significant amount to the revenue of China's software industry. CSIA

should act as a catalyst for the growth of the global competitiveness of software-driven IT industry in China. CSIA should avoid the notion of profit making and devote its attention to incorporating as many member companies as possible so as to ensure development and growth in the industry.
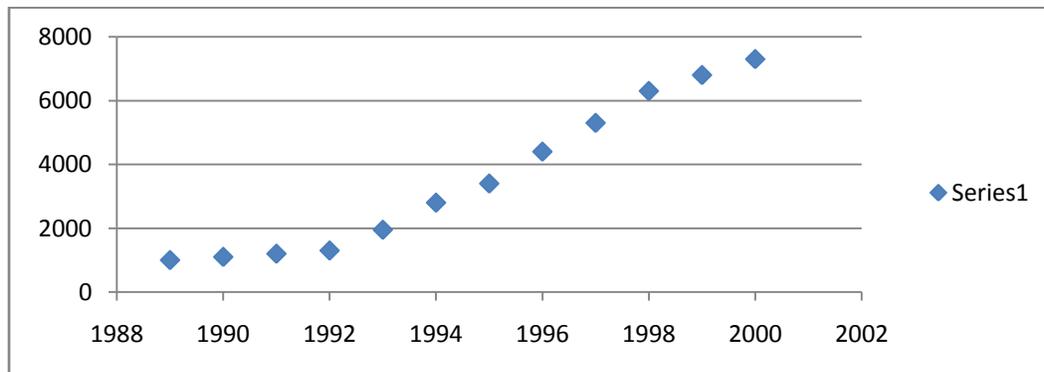
6. Figures

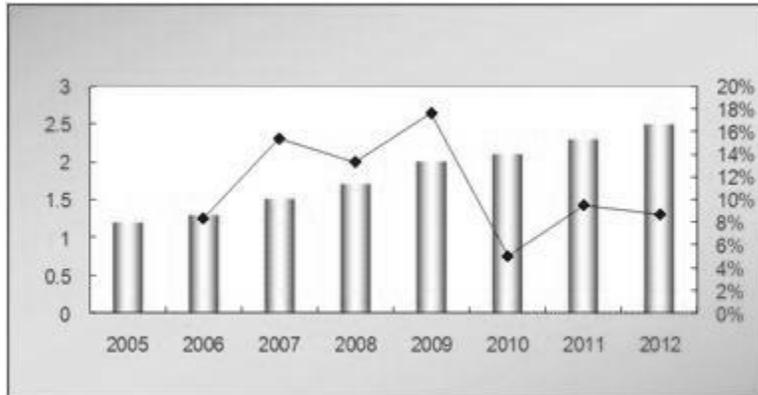**Figure 1: China's software industry in millions of RMB**
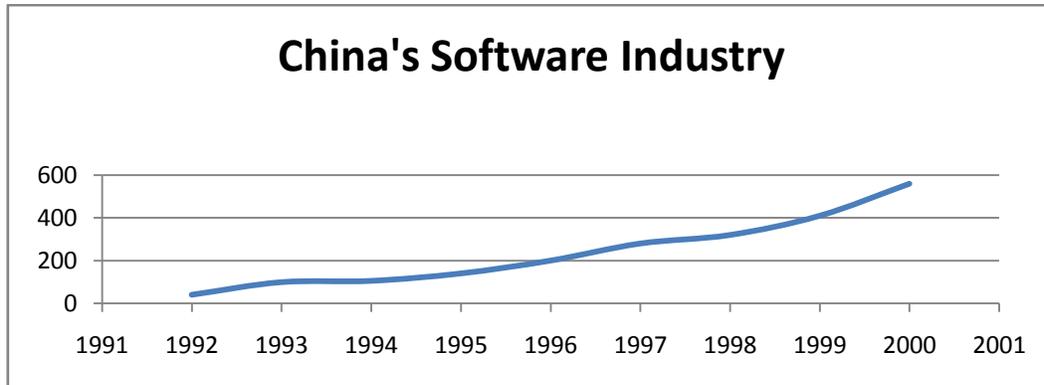
Source: China Software Industry Association

Figure 2: Science and engineering doctorates

Source: NSF, 2002

Figure 3: Production capacity forecast of China Softwareindustry from 2005-2012

Source: www.chinacir.com.cn

7. Conclusion

The software industry in China continues to face serious challenges which include but not limited to: immaturity of software users, language barrier, government emphasis on the hardware sector, leaving the software sector with individuals rather than an aggregate process, lack of intellectual property rights protection, etc. Our analysis however shows that both the government and the firms own promotion mechanisms played a very important role in the growth of the Chinese software industry over the years, Notwithstanding, the government influence had a greater effect on such growth. Rather than only following the footsteps of India to promote export, China should focus on its domestic software services market in the near term and pursue a more balanced development strategy in the long run.

Acknowledgment

References

Arora, A &Athreye, S 2002, 'The Software Industry and India's Economic Development'*Information Economics and Policy* 253–273.

Chuanfeng, H 2007, 'The Role of Alliances in China's SOA Market', Retrieved May24, 2008,from http://soa.sys-con.com/read/471224.htm

CFA, SL 2008, '*DBS Group Research*'Retrieved May 30, 2008, fromhttp://www.kingdee.com/pub/139208301/2008/files/20080528_DBS.pdf

Ghemawat, P 2000, 'The Indian Software Industry at the Millennium,' Working paper 9-700-036, Harvard Business School.

Heeks, R 1999, 'Software Strategies in Developing Countries.'Working paper, Development Informatics.

Li & Gao, 'Strategies for Developing China's Software Industry', *Research Report, Massachusetts Institute of Technology, Information Technologies and International Development*, Vol 1, No.1, Fall 2003: 61-73

LIU & XIAO, Research on Upgrading routine on Chinese Software Outsourcing Companies, Technology & Management, 2011 Jan No.1, PP 96-99

Needle, D 2000, '*Business in Context - an introduction to business and itsenvironment* (3rd ed.)' London: Thomson Learning.

Saxenian, A 2001, 'Bangalore: The Silicon Valley of Asia?'Working paper, National Entrepreneurship Research Center of Tsinghua University.

Tsz-Wang, T 2008, '*KIMENG's Analysis Repor',*Retrieved May 15, 2008, fromhttp://www.kingdee.com/pub/139208301/2008/files/20080416_Kim_Eng.pdf

Wong, PK 2000, 'ICT Industry Development and Diffusion in South East Asia', Paper presented at the ASEAN Roundtable 2000 on New Development Paradigms in Southeast Asia: The Challenge of IT, Singapore

World Bank. 2000,*World Development Indicators* 2000, Washington, DC: World Bank.

Yang, Ghauri, &Sonmez, 2005, International Journal of Technology Management, Vol 29 Num 1-2/2005: pp64-91