THE ANALYSIS OF THE SOFTWARE INDUSTRY IN CHINA FOR AIRBUS GROUP

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ABSTRACT

China's software industry is expanding rapidly as a result of the favourable environment and a Chinese economic growth as a whole. Undoubtedly, many companies are interested in doing business in China including Airbus group. This project aims at providing the consulting service for Airbus. The researcher's objectives are to identify the key factors that shape the Chinese software industry with the focus on the external environment by using PESTEL analysis to evaluate the factors that have high probability and influence on this industry.

After analyzing this market, researcher has found three keys factor that have the biggest influence on this industry. The first one is the economic growth which positively impacts every business especially the technological business such as software. The second pivot factor is the government that can be both opportunity and threat for this industry. They act as influencer, paying customer, investor and regulator that contribute to the development of software industry. On the other hand, sometimes their policies are the barriers that discontinue the growth of innovation. The last vital factor is the piracy issue that impedes the development of Chinese software and it is the barrier to the country's innovation. The general recommendations on how to cope with the two negative impacts are made in the final chapter of this research.

KEY WORDS: Software / Technology/ piracy / China

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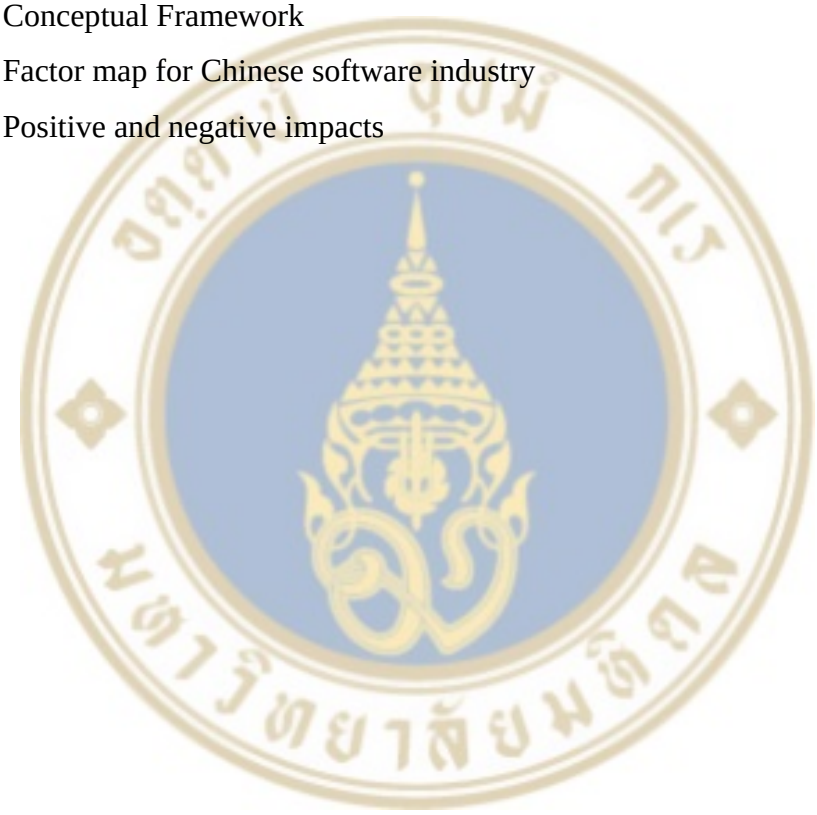

CHAPTER I
INTRODUCTION

1.1 Background

Due to the consulting assignment at Université Toulouse 1 Capitole, the researcher was assigned to work with Airbus Group for three months. Airbus Group is continuously scanning the global environment. One of their objectives is to identify the key factors that shape the software industry. This consulting assignment's proposal is made in the context of a global study targeting various countries and technologies. As a result of the growing economy and expansion rate of software industry in China, Airbus Group sees a lot of potential and is interested in this country therefore the researcher's assignment is to carry out the analysis of the software industry in China with the focus of key external environments.

The expansion rate of China's software industry exceeds 30 percent a year (Jui, 2010). All countries consider the software industry as the core of a technological development including China. China experience the rapid economic growth since they has opened their market to the world. China is now trying to elevate their economy by increasing the technology and science development because it is the total factor productivity that can promote the country's growth and global competitiveness. In order to become the knowledge-based country, China has strengthened the country by transforming themselves to be more innovated and to possess the knowledgeable and qualified human resources. The analysis chapter will identify the key factors that shape the software industry. Moreover it will help explain the foundation of the development of Chinese software industry and the recommendation for the foreign company to be successful in investing in China.

1.2 Problem statement

Chinese software industry is expanding rapidly as a result of the impressive growth of economy, a favorable macro-environment and a growth of this country as a whole. Therefore many companies would like to do their business in China including Airbus Group. In order to have the right strategy and deal with the Chinese suitably, analyzing their software market and identifying the factors that can change the rule of the game in the future will contribute to the Airbus's business success in China.

1.3 Research objectives

1. To identify the external factors that have the biggest influence on the Chinese software industry, with a focus on both positive and negative impact on the industry.
2. To evaluate how these factors can reinforce or change the industry structure.
3. To recommend strategic guidelines for investing in software industry in China.

1.4 Research scope

This research is focusing on the big picture of the software industry in China so the focus of attention of this research is on the analysis of the external environments lying outside the company's control. Studying about the big picture of the software industry in China will help us understand the complexity and the major external players or the factors. The tool that the researcher used to scan the external environment is PESTEL. Each letter represents each factor. The 6 types of factor influences in the PESTEL framework have been judged and scanned based on the macro-environment of the Chinese software business. There are political, economic, social, technological, environmental and legal.

CHAPTER II
LITERATURE REVIEW

This chapter focuses on the impact of Chinese reform to the development of country and then dig deeper into the software industry. More importantly the market challenges are reviewed in the second topic. The information from this part will be used and contribute to the analysis of this industry and pinpoint the external factors that have the biggest influence on the business in the analysis chapter.

2.1 Chinese reform

In the research article by Morrison about the Chinese economic reform, he wrote about the economic growth after Chinese reform. Since the introduction of economic reforms, China's economy has grown significantly faster than during the pre-reform period. From 1979 to 2014, China's annual real GDP averaged nearly 10% (see Figure 2.1). This has meant that, on average, China has been able to double the size of its economy in real terms every eight years (Morrison, 2015). From the above information, it provided the strong evidences that continuous China's growth is mainly due to this economic reform. Therefore researcher would like to know about any other reforms and the impact of these reforms on the innovative products such as Chinese software growth. With this intention, researcher explored about the market reform that accelerated the science and technology development which can help researcher understand the software industry. The researcher will give the evidence for the software growth in the next page.

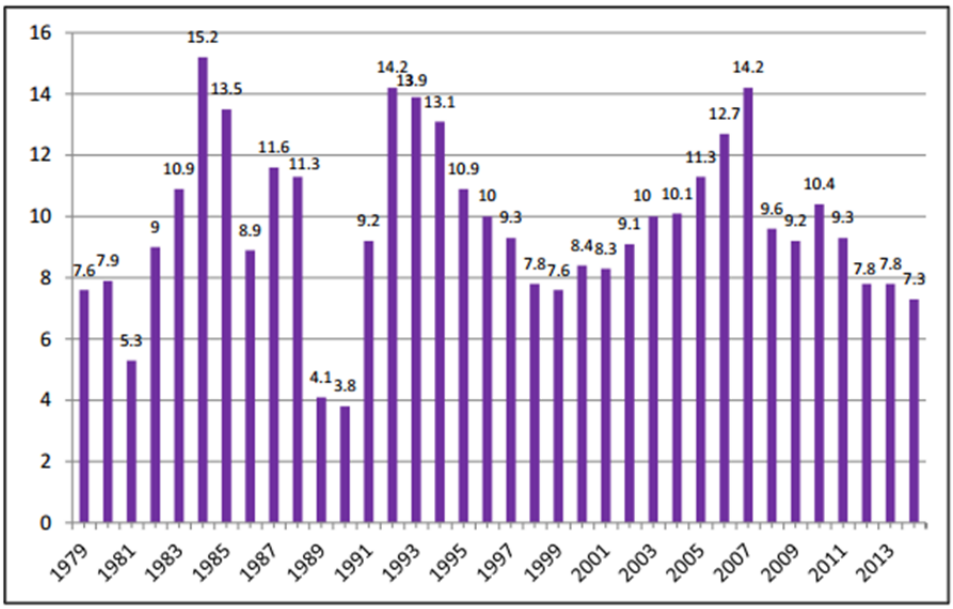

Figure 2.1 Chinese Real GDP Growth: 1979-2014

Source: Saxenian (2003)

Studying this subject from Saxenian gave the clear idea that the Chinese reform contributes a lot to science and technology development which has the direct positive impact to the software industry. As we can see from Saxenian's study. It is written that the software's growth rate is over 30 percent from 1992 to 2000 (Saxenian, 2003).

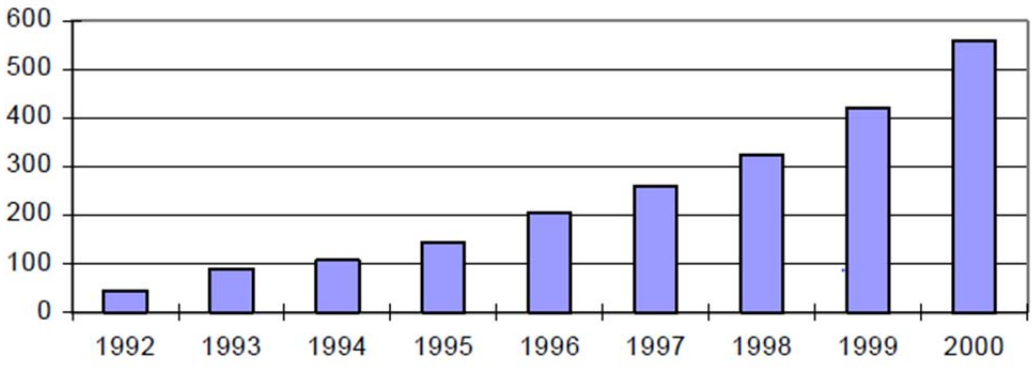

Figure 2.2 China's Software Market (100 million RMB)

Source: Saxenian (2003)

Chinese technology changed from privileging the state-owned enterprises and government research institutes and increased the attention toward non-state technology enterprises. Policymakers tried to experiment with more significant loosening of government control and open the economy to new actors and new forms of ownership such as the Special Economic Zones, favorable policies toward foreign investment and University-owned enterprise (Saxenian, 2003).

Researcher will begin with the Special Economic Zones. As we can see from the market opening that took place in Shenzhen. The central government gave the autonomy to this city in 1980s to gain the Special Economic Zone benefits. China liberalized market access and initiated more favorable policies toward foreign investment, recognizing that it could play an important role in developing technological leadership. These reforms triggered a dramatic inflow of foreign investment in all sectors of the economy. By the late 1990s China was one of the world's leading recipients of FDI and MNCs had became a dominant mechanism of technology transfer as well as an important source of new management models and training in the technology sector (Saxenian, 2003). Here we can see how the reform benefits to the Chinese development and attracts a lot of foreign investor to invest in China. In addition, it changed the structure and the role of the university or the research center as we can see from the following details from Saxenian.

As mentioned in the previous paragraph regarding the University-owned enterprise or the non-state enterprise that is interestingly important. Policymakers took steps toward promotion of non-state technology enterprises and signaled a new willingness to embrace alternative forms of ownership. Influenced by the successful growth of the small start-ups in the US technology industry based, Chinese policymakers began to encourage the formation of a "new" generation of technology firms--typically entrepreneurial spin-offs from universities or government research institutes. The initial technology and offices were from the university or research institutes. They were thus viewed as neither "private" nor "public" but rather "collectively-owned" enterprises (Saxenian, 2003).

The Legend Group (a spin-off from the Chinese Academy of Sciences) and the Founder Group (a spin-off from Peking University) are two of the leading successes of this generation of "non-governmental" technology firms. The opening of

the technology sector to private and other forms of ownership was paralleled by substantial reductions in the manpower and mandates of government ministries. A major restructuring of the Chinese Academy of Sciences (CAS) and its research institutes, for example, included dramatic reductions in the workforce and the introduction of competition in hiring decisions. The Institute of Software, which performs research on fundamental software theory and applications, reduced its workforce from over 500 to 125 between 1999 and 2001. Many individuals whose jobs were eliminated found jobs in private enterprises with the training they had received at the Institute. Salaries were increased from an average of 2,800 RMB to 5,000 RMB per month, with top salaries around 15,000 RMB per month. This insured that programmers and technicians at the Software Institute were paid more than their counterparts at private firms such as Legend. These salary increases reduced turnover from 30% in the late 1990s to around 10% in 2001 (Saxenian, 2003).

Studying this topic from another research to see the consistence of information, it has the concurrent core idea with Saxenian such as from Wong's research. The Universities or state research centers are influencing the industry. The university-market linkage in China offers a unique case to study the evolving institutional relationship between academic and industry, since china's innovation system has experienced dramatic change over the last three decades. The development of university-market linkages has been greatly influenced and conditioned by such change (Wong, 2011). The most important form of university industry linkage are as follows; technology contract, joint research center, University science park and University-owned enterprise (Butler and Gibson, 2011).

The two important form of university industry linkage are the flow of university graduates towards industry and the flow of new knowledge generated by university-based research through public channels. The concentration of technical skill, research, and university connections contributes to external economies and a self-reinforcing process of increasing returns, as software firms benefit from the pooling of managerial and technical skill and know-how as well as the benefits of connections to universities or research labs. More effective research-production linkages could be achieved by making enterprises more economically accountable as a result of the marketization of the economy and, thus more receptive to technological change and

forcing R&D institutions into economic accountability by drastically constricting their budgets and revenue streams. Budget allocations from the state were, accordingly, reduced, management autonomy of R&D units was increased, mobility of S&T personnel was encouraged, and efforts were made to promote the establishment of a "technology market." Research institutes were expected to enter this market and raise revenues (Suttmeier and Cao, 1999). In the research from Suttmeier and Cao, it is obvious that the research centers and production are more connected and this linkage contributes to the productive outcome. More importantly, it emphasizes on the positive side of the government supportive policy in China.

From the above paragraph that provides the useful information about the government supportive policies in Science and technology. The researcher studied further specifically for software market from Jui. Driven by competition or cooperation with multinational companies, Chinese software enterprises keep developing and are making continuous progress. Meanwhile, the macro-environment is also improving. The Chinese government has gradually begun to recognize the vital role the software industry is playing in the economic development of the country, and regards it as strategic industry affecting China's international competitiveness. In the last 20 years, the Chinese government has introduced a series of policies in order to facilitate the development of software industry. The eleventh Five-Year Plan for Scientific Development of the Information industry and Middle-and Long-term Programming by 2020 was released by China's Ministry of Information Industry in 2006. This emphasized once more the need to support the capability for independent innovation, and highlighted the strategic position of the software industry in the economic development of China. According to the outline, the government aims to support a series of groundbreaking programs during the period of the Five-Year Plan. These programs include the development of such fundamental and core software as a highly reliable network server operating systems, intelligent database management systems, network middleware and integrated application development platforms (Jui, 2010). As the researcher sees that the software industry is important for Chinese economic development and government tries to improve the country's capability to produce the innovative software, researcher will refer to this information when writing the analysis part.

2.2 Market challenges

From the China business handbook by U.S. Commercial Service, they mentioned about the Market Challenges when doing business in China which is quite interesting for this research. Their idea is to give the special precaution for American companies to be aware of piracy issue when they operate in China. They stated that China often lacks predictability in its business environment. China's current legal and regulatory system can be opaque, inconsistent, and often arbitrary. Implementation of the law is inconsistent. Lack of effective protection of intellectual property rights is a particularly damaging issue for many American companies. (U.S. Commercial Service, 2013)

From the above idea regarding the intellectual property issue, the researcher is interested in this constraint in China therefore researcher searched for the specific information about the intellectual properties issues from the other literatures conducting by other researchers in order to see their perspective toward this country and to see how this issue affects the specific software industry.

In the research article by Fang, it is concurrent with the China business handbook about the idea that Chinese intellectual property protection is ineffective. This literature gave the vital information about the infringement percentage in the software industry which is extremely high. China has some of the highest piracy rates in the world with a piracy rate of 96% in PC software, 93% in motion pictures, and 85% in records and music (Fang, 2007). It means that the software companies operating in China have the high probability to face the infringement problem after they launch the new product. From the Global Software from Emerging Markets article, he provided information about the survey results about the barrier to the industry's growth. A survey of Chinese software enterprises reports that more than one-quarter of respondents consider unauthorized copying, sharing and installation of software to be the most significant barrier to the industry's growth. The software landscape in 2000 was described as immature with a general unwillingness of users to invest in software. The household market was small because Chinese either could not pay for software at all, or were willing to buy pirated versions. A Chinese company with a new product idea is more likely to have the idea stolen than become a market leader (Saxenian, 2003).

The thought about piracy issue can be confirmed by Xue's literature. He wrote that patenting activity in China's universities has been relatively weak compared with other developed countries, but improvements have been made steadily (Xue, 2006). One important thing is the improvement of the patenting activities in China as the reader can see below from Saxenian article.

The Chinese government has repeatedly announced plans to crack down on software piracy. Most recently in 2000, State Council Document 18 outlined harsh penalties for piracy, including fines of 5-10 times the value of the pirated software and jail time and equipment confiscation for manufacturers. In some cases the penalty has included execution. Government official appear to understand the importance of intellectual property protection, particularly because they want to continue attracting foreign business. However it remains to be seen if these regulations will be adequately enforced. China's membership in the WTO should accelerate progress on formulation and implementation of intellectual property rights protection, but the backwardness of the legal system in China will continue to limit recourse (Saxenian, 2003).

After realizing that the legal system in China is the barrier to limit the recourse of intellectual properties right issue including the content from U.S. Commercial Service stating that China's current legal and regulatory system can be opaque and inconsistent. Therefore researcher searched about the impact of the lack of rule of law in China. The relationship marketing can be the outcome of the inconsistent regulatory system. The following research from Flambard-Ruaud concludes that relationship is built on a cultural platform which means that the route to developing a good relationship can be very different in the Western and the Eastern cultures. Not only are the methods for building relationship different, but also the relative importance of the attributes which make up the relationship are valued differently in different parts of the world. In other words, cultural factors play an important role in the development of relationship marketing (Flambard-Ruaud, 2005). Here we can see that cultural factors are important when operate the business in any context so the cultural study needs to be taken into account when evaluate the market.

CHAPTER III
RESEARCH METHODOLOGY

3.1 Conceptual Framework

he center of attention of this research is on the analysis of the big picture on the software industry in China. Studying about the Macro-environment will help us understand its complexity and dynamic evolutions of this industry. Therefore, the tool that the researcher used to scan the external environment is PESTEL. The framework as shown in figure 3.1 is applied in order to assess how the factors influence business performance. Each letter represents one factor. The 6 types of environmental influences in the PESTEL framework have been judged and scanned based on the software business in China. There are political, economic, social, technological, environmental and legal.

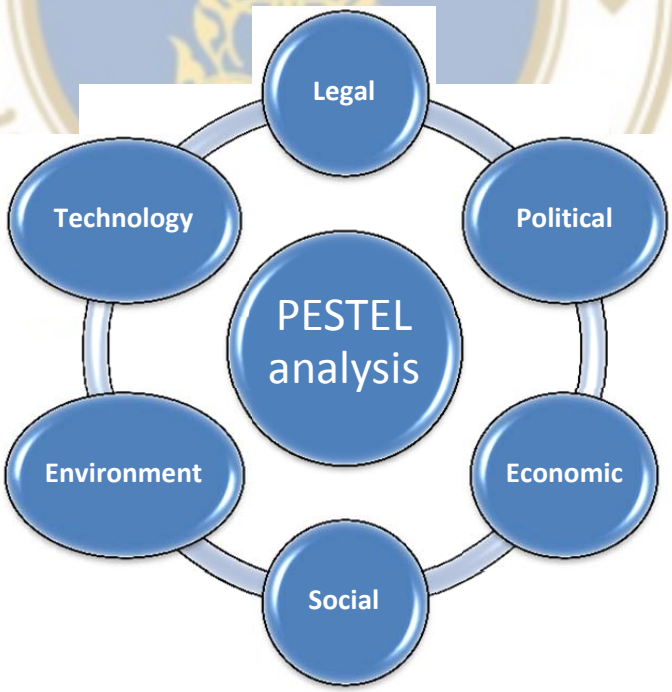

Figure 3.1 Conceptual Framework

Here are the processes that the researcher adopted when using the PESTEL: The first step is to list all the key issues that the firm cannot control. The second step that researcher used is evaluating how these factors can impact the industry with the focus on the pivot factor. The pivot factors are considered based on the level of influence and the likelihood of occurring or the possibility that these factors can occur or already occur and have the impacts to the business. The third step is considering the category of each pivot factor whether they negatively affect the industry or give the positive outcome to the industry. The last step is to figure out how the firm can cope and handle these negative factors by giving the strategic recommendation to the firm.

It is essential to clearly delineate the subject and scope of a PESTEL analysis (market, industry, customer segment, geography). After that the information from table 3.1 will be used as the checklist and helps to unveil the most influencing factors (Hanot, 2016).

Table 3.1 The PESTEL framework

Political	Economic	Social	Technological	Environmental	Legal
• Political risk/ instablilities • Tax policy • Nationalization • Monetary policy • Social protection • Public expenditure • Innovation • New technologies • Convergence of technologies/ usages • IP/ Patent protection • Fundamental R&D (University/ Government) • Applied R&D • Business clusters	• Economic cycle • Rate (interest, inflation, exchange, unemployment) • Macroeconomic aggregates • Investment & Foreign investment • Marginal propensity to consume	• Demography • Education level • Standard of living • Diversity & Minority (Ethnic, gender, age) • Equality of opportunities • Age pyramid	• Innovation • New technologies • Convergence of technologies/ usages • IP/ Patent protection • Fundamental R&D (University/ Government) • Applied R&D Business clusters	• Social responsibility • Ecology • Pollution control • Renewable energy • Saving energy • Waste management Recycling	• Labor law • Accounting standard • Anti-trust legislation Industry specific requirement (e.g.Safety)

Source: Hanot (2016)

3.2 Data Collection Method

For this research, the researcher used the desk research method to refer to secondary data and collected all the relevant information. The data that the researcher collected were from the published reports, e-book, journals and statistics from the internet sources. All the certainly important sources were used to analyze Chinese software industry in all aspects.

CHAPTER IV
FINDING AND DATA ANALYSIS

This chapter represents the PESTEL analysis that conducted to scan the external macro environment (big picture) in China. The analyses are divided into 6 parts which are Political, Economical, Social, Technological, Environmental and Legal. In the end external factors that have the biggest influence on the business are pinpointed by narrowing down to the most important factor based on two criteria: their level of influence and their probability of likelihood.

4.1 Political

4.1.1 Government-led development

Government has the dominant roles for the development of science and technology industry. Government is the main actor that contributes a lot to the software business in this country. As they are the major influencers for this industry in so many ways, the researcher will describe each role of the government in the following paragraphs.

The government is the promoter by acting as the paying customer. They have paid a ton of money in order to support the Chinese software market. They have enforced all the government departments, stated-owned enterprises and collectively owned enterprises to purchase the Chinese software components by not considering the foreign software which has more stable system. This might be for security or nationalistic reasons. For this policy, the researcher thinks that it is the barrier to enhance the innovation in their country. If domestic companies perception is that there are the huge market waiting for them and they will buy their products without considering the quality and the level of innovation. They will not do more jobs on the improvement of software which require a lot of money to invest such as hiring more researchers and pursuing the new opportunity.

The second role of the Chinese leader is they are acting as the investor. They have invested a large amount of money to support the Local software research and university. The Chinese government gives the high level of interest in education and training. They continue to invest a lot of investment which return to the development in the research and development that support the country's strategy. For the academic research center, it will be mentioned again in the technological factor.

Moreover, another important role of the Chinese leader that the researcher would like to point out is they are being the regulator to support the science and technological improvement. They regulate many rules to enhance the ability of the Chinese firms to survive and be stronger in the global market. Also, the foreign investors gain the benefit from the government subsidy policies. Since they want to enhance the Chinese capability in technology and Science, foreign investor can be the good mentor for them so foreign investor is welcomed to make their investment here.

4.1.2 The Drive for "Indigenous Innovation"

As mentioned in the above sub topic regarding the Chinese regulator that acts as the main players to maximize the growth of Software industry. Their policies are to drive the indigenous innovation in China. After reading many articles about their country's policies and plan, it is very obvious that they want to go from the model of 'Made in China' to 'Innovated in China'. Their ambitious plan to modernize their countries structure has made the positive impact to the economy. They want to transform themselves from the model of global center of low-tech manufacturing to the major center of innovation by the year 2020 and in the end they have targeted themselves as the global innovation leader that has to be achieved at the end of 2050. They plan to reduce the reliance on foreign technology and raise the expenditure for technological development. As the innovation is one of the total factor productivity, the major Chinese strategy for the country's development is to be the innovation-oriented country.

4.2 Economical

4.2.1 World's fastest-growing economies

Since China has implemented the free market reforms. They have become the world's fastest-growing economies. Their real gross domestic product (GDP) growth has been almost 10% through 2015. The high growth economy has the strong relationship with many positive factors. The researcher idea toward this growth is the higher purchasing power of Chinese customers for the software products and services. Also, the government's ability to invest more money on the development of technology is increased. Moreover the better economic outcome, the higher foreign investment which will bring to China the latest-generation technology including the foreign mentors for Chinese labor can be expected.

4.2.2 The immaturity of the Chinese financial system

There is the obstruction for the development of software market; it is the immaturity of financial system in China. The researcher will divide them into two main obstacles. They are the limitation of private enterprise and the limitation of software in general.

According to the limitation of private firms, it is mainly due to the ability of the Chinese bank to analyze the credit of the business so the banks prefer to lend money to state-owned enterprises and collectively-owned enterprise. As a result, the private companies have very little access to the bank loan or market capital. When the non-state firms have the idea that might have the positive impact to the software industry and customers but they do not have the capital to invest, they lose the opportunity that they can pursue and cannot become the market leader. This is the major problem that is not only constraining the individual companies' growth but also that negatively contribute to the country as a whole.

The underlying issue of the Chinese financial system can impact the entire software development because the lack of credit analysis capability of the bank can impede the growth of the software industry in all sectors. Since they have no credit analysis, they prefer to invest in tangible asset as opposed to intellectual properties or intangible assets as software.

4.2.3 Foreign investors as partners and mentors

Due to the large pool of low cost labor, researchers and programmers plus the huge local market, many famous foreign companies are interested in doing business in China. Their presence in China does not contribute only a ton of money circulated in China but the foreigners can be the partners for the local company and also they can be the mentors for Chinese workforce.

4.3 Social

4.3.1 Population

The large population in China can be implied that there are many customers in China to buy software products and services or we can say that China has the very huge market. Moreover this large population can contribute to the labor advantage in China. The labor advantage can lead to the higher investment of the company because companies have more margins and profits.

4.3.2 Demographic Challenges

China is in the beginning of losing the labor advantage. China is currently facing the demographic challenge. The one-child policy is beginning to impact on the size of the Chinese workforce. The lower number of population begins to reduce the number of labors. When the number of labor including the researcher decreases overtime, the minimum wage and salary are increased. So the companies have more expenditure to cope with. As mentioned when they lose the labor advantage, there is less incentive to invest for the new product because they have to use that money to pay for higher labor costs.

Moreover some companies decide to hire the new graduated students to work instead of the experienced employees that get a lot higher salary. Hiring the new graduated students can have both positive and negative impact to the industry. For the positive side, they might be more innovated than the older researchers but they have less experience to develop the software in the real market.

4.3.3 Brain circulation and industrial upgrading

As a result of the continued robust growth of Chinese economy and the global economic recession, a lot of foreign-educated Chinese working and living abroad return to work and live in China. These returnees have the skills and knowledge that they have obtained from the West and bring it back to China. Also, their ability to speak both Chinese and English including the understanding of the Western business practice, they can be the factor that improve the ability of the Chinese firms to communicate and contact with the western companies. More importantly they can be the influencer for Chinese company to develop the software.

4.3.4 Face-saving value

Face is an important cultural concept in many countries in Asia including China. If you want to establish the good connection or to build the harmonious relationship in the future interaction with Chinese, you have to understand this cultural concept. This concept might be familiar in Asia but this is not the cultural concept for Westerner so if foreigners would like to do business here, they have to learn how to give and save the face to the Chinese counterparts. If someone makes Chinese lose face once, the long-term relationship cannot be maintained because Chinese will not want to do business to anyone who does not respect them. In addition the higher the status rank, the more the individual possesses.

4.4 Technological

4.4.1 State research centers

Government has promoted and made a huge investment on research and development. The innovation system has changed over the last thirty years. Policymaker wants to increase the benefit by accelerating the commercialization of research and development from university. There are two important forms of university and market linkage. The first one is quite traditional and the same throughout the world. It is the flow of university graduated workforces who work for the industry and the second one that is quite interesting, it is the flow of the knowledge generated by research center in

university through public channels. Government has tried to make enterprises more economically accountable by forcing research and development institutions into commercial system.

There are four types of the linkage. They are technology contracts, joint research centers, university-based science parks and university-owned enterprises. Of all the forms of university and industry linkage, technology contract is the most commonly form and they have the most flexible format. The Joint research center is the coordination between universities and the domestic/international firms. For the University-based science park, it is created by a joint effort between local government and the university. Most of these parks are located on or near the university's campus. It gained popularity recently but they are only in major cities. All the previous three linkage are familiar stories throughout the world. The last type of the university-based research is a unique story in China. It is the company spin-offs from universities or government research labs. The office and the entire infrastructure are from the research institutes. They are not private or public enterprise; they are called the collectively-owned enterprise. Universities start their own companies to commercialize technology. Such enterprises have made many contributions to the development of the industry. The example of the leading successful UOE are Tsinghua Holding Co., Ltd. (a spin-off from the Tsinghua University), the Legend Group (a spin-off from the Chinese Academy of Sciences), it's subsidiary is Lenovo group and the Founder Group (a spin-off from Peking University).

The previous discussions have pinpointed the changing roles of universities from education and training roles to the one that is engaged in the commercialization of R&D results. They have made the closer links with industry. For some type such as University-owned enterprises, they even have their own companies. Such transformations have yielded many economic benefits for entire society and encourage the innovative system. The University-based research is an important factor for Chinese software market growth. Learning on what they are doing will be an advantage to identify the opportunity and threat for the business.

4.4.2 Piracy issue

China has some of the highest piracy rates in the world. This is the barrier that impedes the innovation in China. Imagine if the company launches the new software component or program today and tomorrow there is a ton of pirated version of them in the market. This is the strong disincentive to invest and be innovated. So the domestic firms try to compete by using the cost leadership strategy by cutting the price instead of improving the quality. Another case of the piracy issue is for the authentic software companies that have to reduce the price to compete with the pirated software program. When they reduce the price, they have less profit that can be retained for future investment.

4.5 Environmental

Environmental law: There is not much to mention about the environment as it does not directly related to the software industry. Only one point that the researcher would like to point out is the environmental crisis in China. China is now the largest source of carbon emission and also has the severe water contamination. This environmental crisis can be the barrier for the country's growth. Moreover the firms should be aware of the quality of life of the expatriates who move to work in China.

4.6 Legal

Absence of transparency: Legal in China is not clear enough to rely upon. There is really the absence of transparency, the stable regulation and the rule of law. Due to these facts, Chinese people have to do the business on case by case basis. They have to build the trust by case by case. In addition, the dominance of the government market including the lack of transparency leading to relationship marketing. Relationship is essential for doing business in China. This is the unfair competition especially for the foreign companies or small firms that has no connection with government. China's regulatory system and financial market favor the firms that have the strong connection with the government through both personal and business relationship. As a result, foreign companies often prefer to joint venture with the firm with good

connection with the state because they can get the government relationship through these firms.

In the west, quality of software is the key to compete with the others as opposed to China. Foreign companies have to be flexible to the Chinese way of doing thing under specific environment. Higher transaction cost can occur because the budget is set for building-relationship activities such as entertaining, dinner drinking with the counterparts in order to build trust.

4.7 Factor map

After studying about the 6 factors, this is the step to narrow down to the most important factors by considering the level of influence and the probability of likelihood. The factors that need to be considered in priority and have significant influence upon the software industry are Political, Economic and Technological. The researcher thinks that these three factors will contribute to opportunities and/or threats to this industry in the future as they have the positive and negative effects to this specific industry. The following paragraphs will explain the reasons why the political, economic and technological are chosen as Pivot factors.

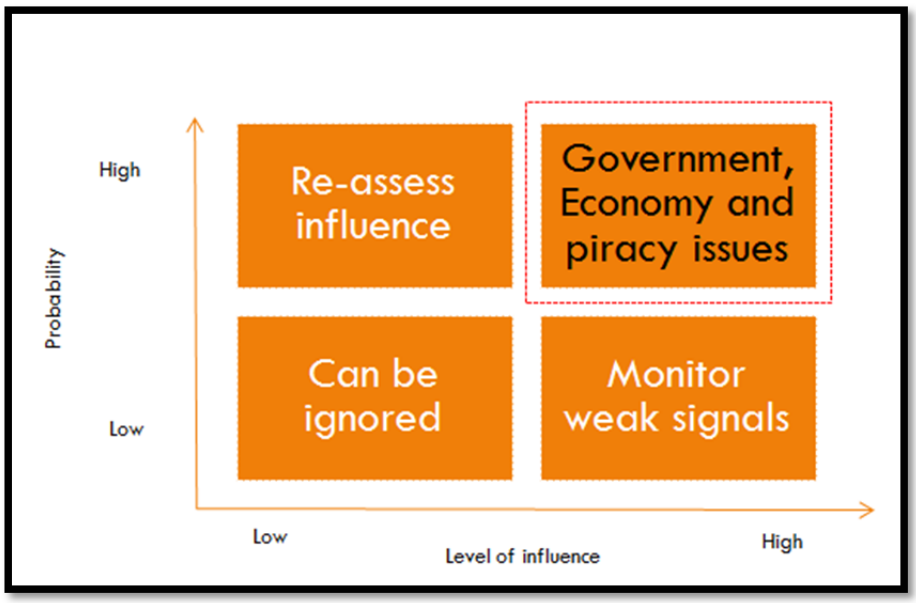

Figure 4.1 Factor map for Chinese software industry

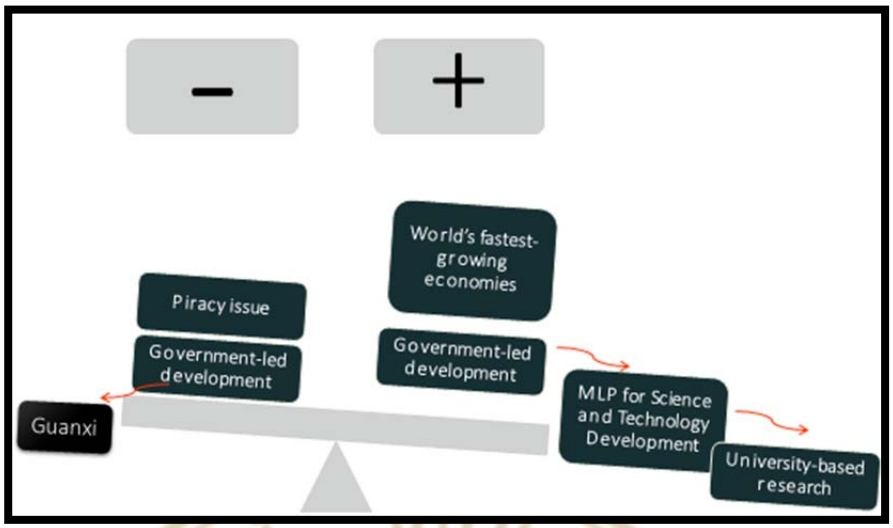

Figure 4.2 Positive and negative impacts

4.7.1 Political factor: Government-led development

Government has the dominant roles for the development of science and technology industry. As mentioned in the beginning, government is the main actor that contributes and makes a lot of effort to support the software business in this country. They are the major influencers for this industry in so many ways such as they are acting as major paying customer for domestic software and they made a huge investment for research and development. More importantly they are the influencer by acting as the regulator to support the software industry such as many subsidy policies. Their ambitious plan to go from the model of made in China to innovate in China will bring the Chinese software industry to the success along with the economic success. Their view is to enhance the total factor productivity and one essential factor in the total factor productivity is indigenous innovation. Therefore they would like to drive and transform China to be innovative country in the near future.

On the other hand, government can impede the innovation in so many ways. The first one is they support and focus too much on the state-owned enterprise and collective-owned enterprise and neglect the private firms. The second one is they are the major paying customer for domestic firms. They enforce the government department and the entire state enterprise sector to purchase the domestic software products. The firms that have no connection and relationship with the government have little room to grow. Another case is too much control on the university-owned

enterprise, too much control is the obstruction of innovations and new ideas that can contribute to success of Chinese software industry.

4.7.2 Economical: World's fastest-growing economies

China is the world's fastest-growing economy. Due to the economic growth and the large number of population, China has the huge local market and number of labor. It attracts the foreign investor to invest in China and enhance the growth of economy. The good economy is vital sign to the fruitful investment and positive outcome for any businesses. Other than that the high economic growth means higher purchasing power, people has more money to buy or purchase for more sophisticated products such as the software program.

4.7.3 Technological: Piracy issue

From the two previous pivot factors, they positively impact the industry's growth. Only the connection or relationship marketing from government has the negative impact to the country's growth. For the Intellectual property right, it has only the negative effect to the software market. It is the very important factor that hinders Chinese innovation. Piracy is not just a problem for software companies; it also affects the economy and the country as a whole. The key impact is on the research and development. Piracy undermines software companies' ability to invest in research and development. It slows the industry's ability to bring new, innovative and better solutions to consumers and to the country. Therefore it is the most significant barrier to the industry's growth.

CHAPTER V
RECOMMENDATIONS AND CONCLUSION

This chapter presents the recommendations, discussion, limitations of the study and suggestions for further studies.

5.1 Recommendations

As we learned from the previous section, it is obvious that investing in China is a good business strategy. Due to the economic status in China including the large pool of labor, huge Chinese market and the government supportive policies to level up the technology and innovation, China is the good a place to make investment. In particular, right now the high-tech, IT firm and healthcare firms are more welcomed than the low-tech manufacturer. As Chinese firms would like to learn about the management styles and process capability from the foreign companies therefore this is the good opportunity for the foreign software companies in China today.

On the other hand, there are the obstacles that impede the development of software market. Chinese software industry lacks the legal protections and transparency. It is the barrier that discontinues the software enterprises to take risks and be innovative. In order to become global innovative actors, the need for greater transparency and regulatory consistency is most required if investors need to do any business successfully in China. In particular for the software industry, the protection of intellectual property right is the important sources for Chinese growth. Another obstacle is the government and guanxi. It will continue to affect all aspects of the business including software sector. The piracy and relationship (guanxi) issue are the important factor that hinders Chinese innovation for a long time therefore if the policy maker can solve these issues that have a big influence on the foreign investment and the foreign customer's attitude whether to invest including to purchase the products here, the Chinese software industry will be the very huge market for many reliable software that can supply to the entire

world. The following paragraphs are the general recommendations for the company for investing in China.

The researcher is going to begin with the piracy issue that negatively impacts the Chinese innovation. To do business successfully in China, the software companies should develop the effective intellectual properties protection that can be enforced and implemented in order to prevent the infringements before the problems arise and also to cope with them once they occur. The second suggestion is to conduct the assessment in order to trade off between the risks and benefit whether to invest a ton of money and launch the new innovative products such as latest vital design or newest technology here or the investor can decide to bring to China only the strategic software products or only the software products that have key contribution to support the business in China. In term of human resources management, the firms should educate the staffs regarding the firm's confidentiality obligations and the consequences of the violation. The firm should remind them frequently especially for the departing employees, the company should let them sign the confidentiality agreement before they leave the firm. In order to reduce the piracy possibility, the firm should write the standard operating procedure stating clearly that who can have the access to which type of information by considering based on the job title and the function they work for. In terms of the business partners, the company should manage them through the multiple level and many personnel to limit the possibility that the employees will use the business network to violate intellectual property of the firm.

The second negative factor that impedes the development of the firm is the government and guanxi. First of all, in order to do the business in China successfully, focusing only on the business itself is not enough. The relationship with the state must be built and maintained. The firm should note and understand the facts that building the relationship takes time and effort but more importantly in order to maintain the relationship is even harder so once the harmonious relationship is created, the firm should be aware not to lose this connection. The company should learn how to coordinate and negotiate with Chinese government. The investors should be flexible in their management and be sensitive to the cultural difference such as solving the problem by using the Chinese way of doing thing and understand the concept of face-saving value. Other than that the company should understand the relationship concept for example in the

business meeting, Chinese normally takes time to know each other and build trust by talking about the non business topic. The investors should be patient and not to rush into the business topic in the beginning. Mistakes in dealings in the beginning could result in competitive disadvantages or loss of opportunities therefore how to negotiate and deal with Chinese government is a constant challenge. The third recommendation for the relationship issue is the quality of network and the experience in dealing with relevant government department can be one of the selection criteria when recruiting the employees or for the partner-selection process. Another suggestion for this issue is to seek the alignment between the company's strategy and the China's policy maker. Then the firm can use this similarity as the strength of the company and present them to the government officials. All in all, the companies should adapt to the local condition but following and implementing the global standard and focusing on the core company's value is also important.

5.2 Discussion

There is no universal solution for any issues. When solving the problem we should consider the context such as cultural concept, the hidden expectations, the interests, personality and etc. Considering these contexts will help us understand the problem and solve them in the right way.

When in China, what we must remember is to understand the market and work with state (guanxi). The second key point is adapting to local condition is recommended but still follow the global standard. The last main idea is to drive the cost down by using the labor advantage but the quality of the products should be maintained or even improved.

5.3 Limitations of the Study and Suggestions for Future Research

There are some limitations when conducting the study on the software market in China. First of all it is the limitation on the language, the researcher do not comprehend Chinese language so the information are only from the English sources. Secondly, the researcher has the obstacles to access some sources i.e. private sources

i.e. e-book. Another limitation that the researcher would like to point out is the difficulties to search for the recent/newest information. One last limitation is only the external environment is conducted.

It is recommended for the further study that in order to keep the analysis up to date; studying this subject from the newest source is highly recommended. Reading all the information and created own summarization was the good step to gather all the data from the e-book. In addition, another key area that requires more evaluation is micro environment and internal environment. They should be conducted in order that the analysis can be more in-depth about this specific business for the individual investors.

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