Study of Indian Software Industry based on SWOT Analysis

HUANG Feixue¹, LI Zhijie²
1 Department of Economics, Dalian University of Technology, Dalian, P.R.China, 116024
2 Research Institute of Nonlinear Information Technology, School of Computer Science and Engineering, Dalian Nationalities University, Dalian 116600, China
huangfeixue@yahoo.cn

Abstract This study’s objective is to probe of Indian Software Industry issue. The method is formulated as based on SWOT(Strengths, Weaknesses, Opportunities, Threats) theory. This paper presented a strategical choice model of SWOT analysis. To study the effects of the proposed model, the case based on fact are discussed. The result shows that the models is feasible. This study’s conclusions could indicate the enlightenment that the software industry of China is energetically developed.

Key words CMM, Software Industry, SWOT, India

1 Introduction

On the background of global economy depression, in 2002, the output value of Indian software industry is $10.1 billion, has a 22 percent increase than 2001; the volume of exports is $7.68 billion, has a 29 percent growth according to NASSCOM. It is predicted that the volume of exports of software will reach $10.0 billion, a 30 percent increase than this year. According to survey from Fortune, almost the biggest 100 companies in America treat India as their first choice of abroad software[1]. The technological innovation of the Internet and the worldwide web have expanded the debate of the nature of organizations and the way people work[2].

Both China and Indian are developing countries with large population and long and great history. These two countries develop their software industry at the same time with great potential by common consent. the approximate number of software corporation is about 6000 in China, and total income has reach 390 billion RMB. However, there are only 25 company whose incomes exceed a billion RMB and the most of them are small & medium business[3]. At present, the scale of Indian software industry exceeds us. Thus, this paper makes study of Indian software industry based on SWOT analysis, and find out the reasons of rapid grown-up and borrow ideas for Chinese software industry.

2 Swot analysis method

SWOT is abbreviation of the first letter of Strengths, Weaknesses, Opportunities and Threats. SWOT analysis aims at interior ability (Strengths and Weaknesses) and external environment (Opportunities and Threats) of subject investigated, and shows them with matrix form and uses the means of system analysis to research. Strengths are particular resource and competitive power of subject investigated, which competitors cannot match, and represent the assets of completive power. Weaknesses mean drawback and insufficiency of subject investigated relative to competitors, which represent Competitive Liability. Opportunities and Threats are positive and negative impact of subject investigated from the trend of external environment change.

Table 1 Model of SWOT Analysis

<table>
<thead>
<tr>
<th>Internal factors</th>
<th>Strengths(S)</th>
<th>Weakness(W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opportunities(O)</td>
<td>S+O exerting advantages seizing opportunities</td>
<td>W+O avoiding disadvantages seizing opportunities</td>
</tr>
<tr>
<td>S+T</td>
<td>W+T</td>
<td></td>
</tr>
</tbody>
</table>

871
In substance, there is a translatable dynamic relation between opportunities and threats, strengths and weaknesses, meanwhile the four factors can be bound to each other as a whole, it is competition that makes these factors together. Five Force Framework tells what we might do, and SWOT answer what we can do, namely, how to do better than competitors, thereby establishing a lasting competitive advantage.

3 Indian software SWOT Analysis

3.1 Strengths
3.1.1 Government attention
3.1.1.1 Preferential policies
Indian seems to have comprehensive understanding that software is treasure in knowledge economy Era. India government plays an important role during software industry growing up promptly. In 1980, India government established long-range strategic planning for developing software; in 1986, India government made policies to encourage software export, software development and training; in 1991, India government made plan to build STPI; in 1998, India government made 108 pieces of measures to develop software industry. This plan asked the government to make policy environment for an aim of $50.0 billion in 2008, becoming one of the biggest countries of software product and export. Detail measures include zero-tariff policy, zero circulation tax and zero service tax, and immunity bank loan and risk investment. Moreover, government’s advertising to information technology leads public passion in India.
3.1.1.2 New software parks and fund for investment
In June 1991, India government established the first software park in Bangalore and took preferential policies-- exemption from import and export tax to encourage overseas and domestic companies, regulated limitation for small and medium-sized enterprises to introduce computer technology, and allowed foreign enterprises to control 75 percent to 100 percent of shares, software businessmen whose product is aboard-oriented could be exempted from income tax. Preferential policies mentioned above stimulate both here and abroad investment and “brain drain” disappears. Thus, many famous IT companies establish research centers and production base in India, such as Microsoft, Inter, Apple and IBM. Some companies even divert more than half of software and development project to India. Along with coming into India, these famous companies bring about not only precious fund but also advanced supervise and technology. At present, India has 18 software parks and 7,500 listed companies, government also plan to establish new software park in undeveloped areas. These positive policies basically become great power for India software development.
3.1.1.3 Exploiting overseas software markets successfully
India government gave special fund to Software Evolution Bureau of Electron Ministry for exploiting overseas software markets and utilized lots of overseas intellectuals. India Electron Ministry often opened India Software Conference in Silicon Valley and Boston with software enterprise federation halted in America and America Electron Association, and held different kinds of workshop and exhibition at home and abroad for software export. They provided precious materials and important market information for export enterprises. For example, under the support of India Commercial Department, NASSCOM set a plan named NIESA, which forms a mass of India-Euro software joint venture and strategic alliance and exploit European software markets successfully.
3.1.1.4 Legislation to protect intellectual property
Software piracy prevails in India at one time, and India government takes efforts to protect intellectual property. In June 1994, India government made amendment and supplement for copyright law and prescribed that owner of copyright have right to lease software, copy software and punish the pirated. For example, that copy and distribute registered software without license is prohibited; anyone can not sell and lease software without owners’ authorization; it is banned that different users in a unit copy or use the same software; it is banned to duplicate and present pirate software to others.
Government punishes delinquents according to civil law and criminal law, the maximum sum of penalty is 200,000 rupee, or 7 days to 3 year’s detainment, or both penalty and detainment. These actions taken by government promote inland and international software market and stimulate software industry.

3.1.2 Advantage of cost

India is a developing country with large population and undeveloped economy, the price of human resource is low. Software industry is human power and knowledge concentrated industry, labor cost occupies more than 40 per cent of overall cost. It is 5 times to 8 times cheaper to employ Indian technologist than other technologists from developed countries. Therefore, low cost is the first piece of brick for knock door to open international software market.

Rapid development of India software industry profits from multitudinous qualified personnel. In turn, training of qualified personnel promotes software industry. India government treats software industry as star industry and the whole nation concerns software industry with great enthusiasm. At present, over 2,500 high schools set up computer class all over the country, about 400 academicals establish calculator and computer software major. Television station set a volume for children’s BASIC. According to statistics, monthly earnings of a high-level software engineer is $400 to $600, it is an occupation with great allure in India because national income per capita is $only 330.

3.1.3 Advantage of talent

India government has special understanding about introduction and utilization of talent. India government show liberal on brain drain. When India talent of software comes back from European and American countries, they bring about not only a huge sum of treasure but also reputation enhanced, even spirit of innovation. They have intimate relation with overseas fellows and each of them has a huge overseas connection network, which plays a non-replaceable role on software export. Meanwhile, they also recognize that intelligence resource consists in human brain, which can not be controlled by nationalization and administrative order. The key point is to make full use of enthusiasm and creativity of talent. India software enterprises adopt the method of employee holding share to call full play of enthusiasm of software development personnel.

Indian education pays much attention on abilities of communication and mathematics ideation of software talent. It is believed that communication is a key to hold clients and comprehend demand. English-speaking technical talent colony in India rank the second in the world, the talent possesses not only ability to listen, speak, read, write and interpret, but also thinking in English; with excellent mathematics skill, the talent can write good software because writing software is accordance with mathematics from definition, theorem and solution of theme[6]. It is no wonder that general manager of worldwide software Ministry of Motorola said, “The reason coming to India is full of talent here, and advantage of cost can only bring about short term benefit.”

3.1.4 Strict quality assurance system

Competition of software is furious world wildly, and India software enterprises are satisfied that quality is the life of an enterprise. There is a quality control department in each software company in India. From the starting of item to alteration of specification, to the final test, all steps are supervised by standard file. The first thing for India software companies is to obtain ISO9000 authentication. Nearly all of India software companies take CMM of Software Engineering Institute (SEI) of Carnegie Mellon University as the benchmark of quality management. Their final aims are to reach the supreme level—level 5, whereas ISO 9000 is corresponding to level 2.5 of CMM. Up to the first half year of 2000, there are 12 software companies passing level 5 authentication of CMM, 5 companies are from India; 70 software companies pass level 4, 42 from India; and more than 200 software companies pass the level 2. Therefore, software companies from India enjoy a dependable impression. India government takes CMM as a magic weapon to tap the market, even as a manager of a software company said, “It is difficult to get business if you don not identify your level of CMM. Taking CMM can reduce “bug” in program and make delivery on time. In the past, only 30 percent of software can be completed on time, but now 70 percent under CMM[7].

3.2 Weaknesses

3.2.1 Depending on software outsourcing and less domestic demand
Overseas markets occupy 95 percent of India software industry, mainly software outsourcing. The development of software industry is dependent on economic background of the country, because software industry can not exist without environment. According to statistics from Culture Development Report of UN, culture development index of India is up to 0.446 in 1995, but only ranks the 139th in 174 countries. India is an agriculture country with over 1 billion population, about 30 million people live in poverty; imperfect equipment manufacturing system, uncompleted department and small scale can not extend domestic market and provide value added service. Therefore, India software industry is lack of domestic market as firm supporter.

3.2.2 Weakness of hardware industry
The structure of Indian information industry is irrational to some degree and hardware manufacturing is almost a blank. For example, there is no IC manufacture industry in India and all chips depend on import. It is disadvantageous for long term development of Indian software without the support of domestic hardware manufacturers, since hardware is the bearer of software and the relation between software and hardware is imitate. Development of software can promote development of hardware and vice verse. Chief of Commercial Economy Department of Indian embassy said, "China has a great power at hardware manufacture, whereas India takes advantage at software, such complement is destined to promote bilateral development.

3.2.3 Unadvanced Infrastructure
Communication network of India is much worse than China’s; there is no large department store or supermarket even in New Delhi; Drinking water can not reach standard and foreigner usually enter India with drinking water. Electric power and communication facilities are poor, when a China study group visit a large scale software company owned 9,500 employees, at least 10 times power failure happened Indian minister of finance pointed out that there are three kind of economy: information economy driven by information technology, old economy represented by tile and puddle, obsolete economy represented by oxcart. It is no doubt that factors mentioned above restrict the development of Indian software industry.

3.3 Opportunities
3.3.1 Instant development of world software industry
Software as product of knowledge is the core of information industry. Software industry has become one of backbone industries of national economy. According to forecast from IDG, software service industry will be the biggest part of computer information market in 21st century and increase with high speed of 7 percent growth rate. Moreover, achievement obtained by Microsoft in human economic history has witnessed the power of software.

As the matter of fact, owing to abundant industrial base and investment of an immense amount of fund, developed countries are advantageous at hardware. However, software industries is based on headwork of talent and require less fund and capacity for producing, which provide an opportunity to develop at fast speed for developing countries with poor industry and economic base. India just holds the chance and gains $3 billion by solving the problem of millennia bug.

3.3.2 History and cultural context and geographic position
Each country has its cultural tradition and inside information of culture is difficult to be understood and merged. After 200 years’ colonial rule by Britain, India gets a heritage—English, which are the official language in India and the general-purpose language of intelligentsia and business circles. In these days, India makes a fault on the right side and English become a tool for software developing. Long term colonial rule makes the middle and upper people accept western ideas easily, and Indian have little handicap to exploit software according to the mode of western development country. At the same time, India has special predominance with western countries because of India belonging to Commonwealth of Nations and western trusting in Indian. For example, American employs Indian to investigate Chinese market. In addition, the time difference between India and America is 12 hours, it appears the famous “economy of 24 hour a day” by communication equipment.

3.3.3 Internationalization and pluralization of software service market
Along with decrease of tariff wall year after year, software service becomes internationalized and
not only restricted to mainland. On the other hand, software industry explore to other industries, such as consultancy industry. According to statistical report from IDC, the scale of aggregate market of global IT service reached $700 billion, half of which occupied by consultancy service. Long established relations make service continuous. At this aspect, India has lots of opportunities.

3.4 Threats
3.4.1 Instability of political environments
Politics and war contradiction between India and Pakistan is severe and internal contradiction of race and religion brings about instability of politics and economy. Instable factors make some people from international investment and software outsourcing region hesitated. India is obsessed by internal race problem since its independence and large-scale collision and society violence events emerge in endlessly.
3.4.2 Horizontal competition
The value of exports of software industry of Israel is $2.5 billion in 2000; Ireland is $8.5 billion; and the sum of population of these two countries is less than 10 million. Moreover, software industry of Korea, Taiwan, Philippine challenges India.
3.4.3 Environment of science and technology
Technology of software industry change fast, software export of India is not export of product and intellectual property but export of labor service. India software companies primarily process for American software companies and intellectual property of most software products still belongs to American companies. Academician Ni Guangnan thought that there is distinct weakness in India Mode. Firstly, output value per capital of software industry is low. Secondly, the market is instable and profit falls with severe competition. Thirdly, it is difficult to establish complete independence software system. As the matter of fact, the expense of software service is $20 to $25 per hour now declining from $25 to $30 per hour two years before in Bangalore.

4 Conclusion and suggestion
Nowadays, the proportion between software and hardware is changing. Hardware prevails at past and software now. According to forecast from authority institution, software industry will become the largest industry of IT market and it is a sunrise industry with the fastest speed to develop already. Bill Gates believes that there is no so called limit in developing of software industry. The cake of software industry enlarge gradually, we must pay much attention on it.

According to the report of New York Times, the cost of development software can reduce 20 per cent, owing to our policy to develop software industry and cheap labor cost. It is forecasted that China becomes the second large software export country in 5 to 10 years instead of India. When he visited India, Bill Gates forecasted that software industry of China would reach India’s in 5 years. To sum up, the weaknesses and threats of software industry of India can become advantages and opportunities of us in a way. If seizing opportunities and giving full play to comparative advantages, we are destined to make foretell come truth.

References