China Telecommunications Market: An Overview and a Proposed Strategy for Foreign Telecommunications Companies

by

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Submitted to the Alfred P. Sloan School of Management and the School of Engineering in Partial Fulfillment of the Requirements for the Degree of

Master of Science in the Management of Technology

at the

Massachusetts Institute of Technology

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ABSTRACT

Since the economic reform in China that began in 1978, The Gross Domestic Product (GDP) of China has grown at an average rate of 9.6% a year. China’s telecommunications industry experienced explosive gain with more than 20% a year in the last few years. In 1994, the switching capacity of provincial telenetworks reached 49 million circuits, a 62% increase compared with 1993. It is expected that the switching capacity will be over 100 millions in year 2000. During this period, the beepers, cellular phones, and fax machines will increase dramatically too. Obviously, China will be one of the world largest telecommunications market in the next decade.

The huge telecommunications market, the poor telecommunications infrastructure in China, as well as “Open Door” policy set by Deng, Xiaoping, gave all telecommunications companies of western countries a good chance to invest in China’s telecommunications market. In the last decade, most of the telecommunications companies of western countries, like AT&T, Motorola, Siemens, etc. opened their offices, sales centers, training center, and manufactures through joint ventures in China.

Because of the central control system in China, especially in telecommunications sector, along with the different culture between western countries and Asian countries, most of the telecommunications companies experienced some unexpected barriers and hardship in doing business in China.

The objective of this thesis is to analyze the economic situation, telecommunications market in China, and to propose a strategy to do business in China for foreign telecommunications companies. The research will study the investment environment and government policy in China, as well as the similarity and the difference between China and the other Asian countries. Motorola in China will be discussed as a successful case for foreign telecommunications companies.
Acknowledgment

First of all I thank my wife, Minghua Zhang, for her sacrifices, patience and support during the time this thesis was being completed.

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In May 1993, the International Monetary Fund (IMF) changed the way in which it calculated its national output statistics. Overnight, China becomes the world’s third largest economy, with a per capita income of $1,600 and a total economy of $1.7 trillion. Only the United States and Japan loomed larger in the international economic arena.

While the suddenness of the rankings catapulted China into sudden prominence, China’s economy had actually been growing steadily for nearly 15 years. Since the economic reform lead by Deng, Xiaoping in 1978, China had grown at an average rate of 9.8% a year (Figure 1), rivaling the earlier stellar performance of Japan and the East Asian economies.

---

**GDP FROM 1970 to 1993**

![Graph showing GDP growth from 1970 to 1993](image)

Figure 1 China GDP Growth in the Last 20 years

Based on Chinese Yuan in 1987 price
“Dragons” (Singapore, Taiwan, Hong Kong, and Korea). From 1992 to 1994 China’s economy grew by 13%. Other economic data were just as startling. Exports, for example, were soaring, from $2.3 billion in 1970 to nearly $70 billion in 1992, and were over 100 billion this year. Foreigners were once more pouring funds into China, driving investment flows up from virtually nothing in the late 1970s to more than $7 billion in 1992.

China, with population of nearly 1.2 billion people, is the most populous country on earth. It had 10 times as many people as Japan, and 50 times more than Taiwan. A growing China, therefore, meant not only a rise in living standards for fully 20% of the world’s population, but also a significant tilt in the entire global economy.

The incredible size and growth of China’s economy caught Western analysts somewhat by surprise. For decades, China had been regarded only as a potential power, a massive state hobbled by its population, its poverty, and its ideological commitment to communism. By 1993, that all seemed ready to change. With a world recession and a large potential market in China, western analysts and business people were flocking to China, looking to discover the Chinese strategy for economic growth and ways to profit by it.

As the dramatically development of China’s economic, the China’s government recognized that a well-developed telecommunications infrastructure is key to efforts to improve weak economies and compete in the world market. Since 1985 the telecommunications network has been developing more rapidly than GDP growth and over the past few years this trend has accelerated, from 40% growth in 1991, 49% growth in 1992, to a vigorous 68% in 1993¹ and with the growth rates of 52% and 45% in 1994 and 1995, respectively. The switching capacity reached 65 million in 1995² (See Figure 2.2). It is expected that the national telephone capacity
(Million Switch Capacity)

Figure 2  Switching Capacity in China During 1990 to 1995

will be over 100 million by 2000. Consequently, telephone availability rate would reach 8% of the population, and about 30% to 40% of the urban population. In the next ten years, China will become the largest single market for basic telecommunications infrastructure investment. It is estimated that the total investment of China’s telecommunications over next ten years will be over $100 billion. All the major western telecommunications companies flocked to China and did their best to invest in this largest telecommunications market in history. Only in the last few years, China had set up more than 40 joint ventures with companies from the US, Britain, Germany, France, Japan, and the South Korea to produce program controlled telephone exchanges, optical telecommunications, mobile communications and digital microwave communications equipment with a total investment of $300 millions. Obviously, how to invest in China’s communication industry, what kind strategy should be applied to this huge market and how to make profit is an important topic for all western telecommunications companies. In this thesis, I will involve the following stages about China’s telecommunications industry.
1. Introduction:
   Survey the China's economic reform and telecommunications market. Investigate the existing infrastructure, market trend, and national policy of China’s telecommunications.

2. World communications market:
   Survey global telecommunications market, compare the markets in the developed countries and the developing countries. Recall the telecommunications development in Asian “Four Dragons”.

3. China telecommunications investment and policy:
   Study the government policies to telecommunications and foreign investment. Show the changes in telecommunications investment in the last decade in China.

4. Motorola in China
   Study the experience of Motorola in China as a successful example of foreign investment in China.

5. Doing business in China
   Analyze the telecommunications market in China, especially government role, buyer power, competition, substitute, timing, etc.

6. A strategy in telecommunications in China
   Propose a strategy for foreign telecommunications companies and a framework.

7. Conclusion
Chapter One

Introduction: Economic Reform and Telecommunications Market in China

1.1 Economic Reform in China

China is home to nearly 1.2 billion people (over 20% of the world’s population), of which 600 million live in rural areas and 400 million live in urban areas. It has a workforce of nearly 580 million people, and an adult literacy rate of 76%. The middle school enrollment rate is about 55%-60% of the student age population.

In 1978, Deng Xiaoping, the leader of the Communist Party and the People’s Republic of China, started economic reform and the open door policy. He set three steps for Chinese economic growth in the next 50 years.

Step one, to double China’s GDP of 1980 in ten years with the chief aim of providing adequate food and clothing for the Chinese people.

Step Two, to double the GDP once again in the next ten years so that the Chinese people could enjoy a comfortable life by the end of this century.

Step Three, to increase the per capita GDP to the level of a medium developed country by the year 2030 to 2050 and accomplish this modernization of China’s national economy.
During the last 15 years China succeeded in pursuing this long term goal with consistency and determination. Since the telecommunications development in China is closely relative to the long term goal of the economic reform in China. I would like to state three points for the effective implement of the long-term economic reform goal.

First, China succeeded in directing the foreign investors. China is a big country with 1.2 billion populations. The economic reform was under the control of the government and was proceeded step by step. In 1979, China announced an Open Door policy that, for the first time since 1949, selectively invited foreigners to invest in China. Four “Special Economic Zones” (SEZs) created along China’s coast. The SEZs explicitly welcomed investment and sought to attract potential investors (particularly overseas Chinese) with tax incentives, foreign exchange provisions, and a decided lack of regulation. In the following years, China opened more “Special Economic Zones” to attract foreign investors. In this way, China got the experience of free market and expanded it to the all country step by step.

Second, China was very successful in the agriculture reform. With the most population in the world, the agriculture reform is a key step in the all economic reform. If the agriculture reform fails, it is impossible for China to import food to feed 1.2 billion people. When Deng came into office, China’s peasants were still organized in communes, work brigades, and production teams. Men and women were assigned in military fashion to specific tasks. Deng changed all that. He encouraged the establishment of private plots and sanctioned the sale of surplus production and other cash crops in newly free markets. State procurement prices were raised and prices for most agricultural goods were left to the dictates of the market. Deng and his officials broke up the communes established by Mao and replaced them with a complicated system of leases that eventually brought effective land tenure back to the household level. Under the so-called Household
Responsibility System, peasants were allowed to lease land for a fixed period of years from the collective under a contract that mandated that they would deliver to the collective a minimum quota of produce, usually basic grain, but could then sell any surplus they produced either to the state at government-set procurement prices or on the newly free market. Since then, agriculture grew steadily at 3.2%. Grain production grew from 305 million tons in 1978 to 395 million tons 1989. It is estimated to reach 500 million tons by 2000. The success of the agriculture is the solid base for the fast growth of the national economy.

Third, as the economy surged, so too did inflation. Chinese government succeed in controlling inflation. Compared with the over 1000% inflation in Latin America, the former Soviet Union, and the eastern Europe, China controlled the inflation rate between 10% to 20% during the last 15 years. Under the strict control of the government, the price was opened step by step under the transition from the central control system to free market system. The control of inflation with the success of the agriculture reform provided the basic conditions for the continue economic reform and growth.

From 1980 to 1994, the average GDP growth rate per year is about 9.8%. The goal of the first step had been achieved in 1988, two years ahead of the schedule. The goal of the second step was achieved in 1995. If China keeps its GDP growth rate over 6%, China’s GDP will be around $1,500 billion to 3,000 billion based on the current exchange rate in 2,020. This is about half of US GDP in 1994. While the gross domestic product is evaluated using the local purchasing power instead of the standard foreign exchange rate, China would have the economy size only next to that of the United States and Japan in 1993. Whichever calculation approaches are used, it is clear that the growth of China economy makes China one of the powerful economic countries in the world and it will become more powerful in the near future.
1.2 Telecommunications Market in China

Before the economic reform in 1980, China’s telecommunications industry is very backward. The policy of telecommunications is to serve government and military, not to individual and family. There is no telephone service for individuals. The telephone availability rate is below 0.2%.

Since the invent of telephone in 1876, the telephone network developed dramatically in the western countries, in particular, between 1920’s to 1950’s. It played an important role in the economic development. The China’s government recognized that a well-developed telecommunications infrastructure is a key to improve economies. In 1980 when the China’s government set the plan to increase China’s GDP four times by 2000, the Ministry of Post and Telecommunications set an aggressive plan to increase the basic telephone line 8 times by 2000. Since 1985 the government and the Ministry of Post and Telecommunications invested huge money to improve its poor telecommunications system. The incredible plan set by the Ministry of Post and Telecommunications (MPT) was implemented by 1994, 6 years ahead of the plan. During this period the China’s telecommunications, include the basic telephone lines, beepers, and cellular phones, increased about 20% annually.

In 1994, according the statistics of the Ministry of Posts and Telecommunications, a total of 18 million digital switching circuits was installed in the public telecommunications network with about 2 million circuits replacing the old, non-program controlled switches, and 16 million new circuits. As a result, the total switching capacity of the telenetwork under the Ministry of Post and Telecommunications increased to 47 million circuits. Of the total increase, 9.8 million circuits (59.4%) were installed in coastal provinces. Guang Dong topped the nation with 2.1 million circuits added, 1.07 million circuits of which were installed in the rural network. Newly installed switchboards also
Chapter 1 Introduction: Economic Reform and Telecommunications Market in China

exceeded or were close to 1 million circuits in Zhejiang (1.34 million), Jiangsu (1.09 million), and Liaoning (about 1 million).

Because of heavy reliance on foreign government loans and loan guarantees, foreign made switch still had the lion's share of the market. Nevertheless, sale of domestic made central office switch boards increased dramatically from 760,000 circuits in 1993 to 2.7 million circuits in the first three quarters of 1994, a gain of 257%. Major domestic models include HJD-04 (1.5 million circuits) developed by Zhengzhou information Engineering Institute of the PLA, DS-30 (500,000 circuits) developed by the Research Institute of MPT, and C&C08 (sales-mainly in rural areas - totaled 1 Billion Chinese Yuan in 1994) developed by Shenzhen City Huawei Company. A recent report revealed that a comparing test between the C&C08 model and the AT&T 5ESS model conducted by the MPT showed that the former is even better than the AT&T product in certain aspects. Chinese scientists have also developed their own signaling system 7 (SS7) with performance comparable with the international standard in the 1990s.

In addition to the central office switch board installed by the MPT network, China also gained an estimated total of 4 million circuits of switching capacity in private branch exchange so that the total PBX switching capacity exceeded 15 million circuits by the end of 1994. PBX has been very popular among state-owned firms, schools, universities, hospitals, and other units because these units can collect subscription fees among their employees who live in the residential buildings owned by these units. Recently, however, the MPT has issued a policy regulating PBX development. Nevertheless, with the market still growing, experts believe that before the end of the century, China needs to install at least 4 million - 5 million PBX circuits each year.

Big gains have also been reported in paging and cellular phone services. By the end of 1994, paging subscribers totaled 10.8 million, 4.6 million (87%) more than 1993. The
Chapter 1 Introduction: Economic Reform and Telecommunications Market in China

number of mobile phone subscribers increased by 900,000 to 1.6 million, up 156% from a year ago. In Guangdong Province alone, mobile phone subscribers exceeded 490,000. Regional free roaming has been achieved in the Beijing-Tianjing-Hebei; the Shanghai-Guangxi-Hainan-Hunan regions. A nationwide free roaming system connecting the capital cities of China’s 30 provinces will be established in recent months. At the same time, the public phones doubled to 540,000 on top of the 1994 record increases, so that a 0.2% public phone density was achieved in major cities.

From 1995 to 2000, official sources of China predict that the high speed growth of China’s telecommunications market will continue. On the switch board market, heavy competition is expected because the production capacity of domestic firms and foreign-funded firms are expected to reach its height in the next few years with the number of circuits manufactured totaling 16 million - 18 million on an annual basis. On the mobile phone market, competition will be mainly among foreign firms since 90% of the equipment has been provided by western manufacturers.

Fax machine has been another fast growing market. Although official statistics showed that by the end of November 1994, China only had a total of 198,000 fax line subscribers (50,000 residential subscribers), the real number of fax machines in use is estimated to be more than double that size. This is mainly because many users do not want to pay for an independent fax line required by the MPT system so the record of 198,000 represents only those registered by authorities. Because Chinese is a language difficult for coding, the fax can be a dramatic tool to facilitate the transmission of information in China. As some experts predicted, the market will grow at an annual rate of 45-50% and have a size of 1.5 million - 2 million units by the end of the century.¹
Chapter 1 Introduction: Economic Reform and Telecommunications Market in China

In order to realize the goal of 2000, China will need huge investment in the next five years. It is estimated that the potential market is about $100 billion\(^2\) to install about 100 million telephone lines and 30 million cable lines.

From 1994, the structure of telecommunications and the major policies for foreign investor has been changed to encourage the competition and to absorb the foreign investment and western advanced telecommunications technology.

- In 1994, China United Telecommunications (Unicom) was created to break Beijing’s Ministry of Post and Telecommunications monopoly.\(^3\) Unicom will create satellite communications opportunities in China’s mobile and fixed telecommunications market. The formation is seen as a victory for those who want to see some competition in the market. Some of the largest telecommunications equipment suppliers, including Alcatel Alsthom, Siemens, Motorola, NEC, Fujitsu, Northen Telecom, LM Ericsson and Telecon, have already contacted Unicom, which is called Lianton in Chinese. Unicom’s first strategic plan is to upgrade, expand and interconnect networks that support the railroad and power systems by installing a number of satellite earth stations throughout China. It is backed by the Ministry of Electronics Industry, the ministries of power and railways, and 13 local investors contributing $121 million. Unicom is linked with Jitong, which was created by Ministry of Electronics Industry to operate as China’s 2nd network. The emergence of this 2nd network has opened the market to international mobile. No later than the turn of the next century, the firm wants to be the carrier of a tenth of the country’s long-distance calls and 30% of its mobile calls.

- China will allow foreign companies to form joint-ventures with the country’s telecommunications companies, under a plan drawn up by Unicom or Lianton.\(^4\) The company plans to invite foreign investors to participate in the construction of a network, jointly with the Guangzhou South China Telecommunications Investment Corporation, a
shareholder in Liantong's Guangzhou branch. The network will be rented to the branch and the foreign partner will be given a certain portion of profit. After a period of time, the property rights would be transferred so the network will be solely owned by the corporation. Before that, foreign participation in the telecommunications sector in China is limited to the technology transfer and the sale of equipment.

- In the last ten years, China have absorbed low interest loans with about $5 billion from 15 countries, including Japan, Sweden, Canada, Belgium, Spain, France, Australia, Germany, Norway, and Finland, as well as Asian Development Bank and the World Bank, to fund its telecommunications project. China is seeking overseas partners for research in the telecommunications industry and in hope to raise another $6 billion in foreign loans by the end of 2000 for developing telecommunications in the coastal areas, provinces along the Yangtze River, and the border areas.\(^5\)

- In May 1994, the Chinese authority announced it would develop one of the world's 3 largest telecommunications networks by 2000 with the setting up a 2nd network, which includes the laying of 16 trunk optical cables to give each provincial capital access to the world network and trebling the number of telephone lines in an overhaul costing Rmb 360 billion (about $44 billion).

According to the above analysis of China's economic reform and the telecommunications development in the last decade and the government plan as well as policy for the telecommunications market, China is very possible to become the largest telecommunications market in the next decade. $100 billion market is really an attractive one for any western telecommunications companies. The strategy analysts at AT&T believe that whether American telecommunications companies could still lead in the world market is based on their success in China's market. In this huge market, there are the following important sectors.
First, the technology transfer and the sale of equipment are still a big market. Since 90% of the equipment are provided by the western companies and the major market share of the equipment will be occupied by the western companies in the next few years, the potential 100 million switch capacity and the other equipment are still attractive market.

Second, since China allowed foreign companies to form joint-ventures with the country's telecommunications companies from 1994, the joint-venture for the network construction will be a potential market. Before that, foreign companies in the telecommunications sector were limited to the sale of equipment. After more than ten years' practice, the China's government and the telecommunications experts realized that the import of the advanced equipment and technology is not enough to satisfy the huge demand the goal of the modernization of the China's telecommunications network.

Third, the sector of paging and cellular phone service will keep booming in the next few years. Due to the deference between eastern culture and western culture, paging and cellular phone have a larger market in China, Hongkong, Taiwan and the other Asian countries than in western countries. It is estimated that the increasing rate of paging and cellular phone will still greater than the fixed phones in the next decade.

Fourth, in the last ten years, China made every effort to increase the telephone capacity to satisfy the huge demand of the market. Most of the investment is on the purchase of the new equipment and the updating of the old equipment. The ignorance of the software development and the management resulted in the inefficiency of the telecommunications system. It is expected that in the next few years, the demand of the telecommunications software, such as billing software, alarm software, network management software will increase. This is a huge potential market in the next decade.
Fifth, as China’s telecommunications network doubles almost every four year, the management of the huge network and the different applications will become more and more important. Relatively Chinese lacks the modern management experience and in tradition, Chinese does not pay attention to management. However, China will realize that importance of the modern management soon. This will be a good market for the western consulting firm, in particular, the firm concentrating in Information technology. AT&T’s regulated businesses spent $347 million on “consulting and research services” in 1993, nearly three times the $137 million it spent in 1990. The American consulting firms have already noticed this market. Most of big consulting firm, such as Andersen, McKinsey, Booz Allen & Hamilton, Boston Consulting Group and A.T.Kearney, established their offices in Beijing and Shanghai in the last couple of years.

Sixth, as the dramatic development of the telecommunications, the various telecommunications applications will develop. China planed to issue about 200 million credit cards by 2000 and connect most of the bank by computer and telecommunications network in the urban and coast areas in the next few years. It is another huge market for telecommunications market.

In summary, China will be the largest telecommunications market in the next decade. The range of the telecommunications will be from the equipment to software, from cellular phone to fax machine, from the telecommunications relative applications such as credit card and bank to IT consulting. The expand and modernization of the China’s telecommunications network and the relative applications will play a key role the China's economic development and will provide a huge market for the western telecommunications companies.
Chapter Two

World Telecommunications Market

2.1 Global Telecommunications Market

The telecommunications market is a huge one in the world. In 1995, the total revenue of the market is about 510 billion, much larger than the world computer market. In the next 10 years, it is predicted to be double again. Table 2.1 and Figure 2.1 indicate the world telecommunications revenue from 1990 to 2000.¹

Table 2.1 The World Telecommunications Revenue from 1990 to 2000

<table>
<thead>
<tr>
<th></th>
<th>1990</th>
<th>1995</th>
<th>2000*</th>
</tr>
</thead>
<tbody>
<tr>
<td>World Telecom Market</td>
<td>$390</td>
<td>$510</td>
<td>$800</td>
</tr>
<tr>
<td>Service Market</td>
<td>$315</td>
<td>$420</td>
<td>$680</td>
</tr>
<tr>
<td>Service /Total</td>
<td>80%</td>
<td>82%</td>
<td>85%</td>
</tr>
<tr>
<td>Equipment Market</td>
<td>$75</td>
<td>$90</td>
<td>$120</td>
</tr>
<tr>
<td>Equipment /Total</td>
<td>20%</td>
<td>18%</td>
<td>15%</td>
</tr>
</tbody>
</table>

* Predicted
In 1990s', the growth rate in the service segment will be greater than that in the equipment segment. In 2000, the rate of the service will be more than 85% out of all global telecommunications revenue. However, in both segments, there exist some imbalance. AT&T, French Telecom, Siemens, NEC, and Northern Telecom consist about half of the equipment market. In the service segment, North America has about 50%, West Europe has about 26.7%, and Japan has about 15% (Figure 2.2). The imbalance indicates some potential market in the developing region.
In 1980's, the growth rate of the telephone capacity was 5.08% per year, greater than the GNP growth rate (2.4% per year) at the same period. The Table 2.3 indicates the growth rate in six continents.²

<table>
<thead>
<tr>
<th></th>
<th>Unit: million switch capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1987</td>
</tr>
<tr>
<td>Europe</td>
<td>155.0</td>
</tr>
<tr>
<td>N. America</td>
<td>138.5</td>
</tr>
<tr>
<td>Asia</td>
<td>122.0</td>
</tr>
<tr>
<td>Latin America</td>
<td>22.3</td>
</tr>
<tr>
<td>Oceania</td>
<td>8.6</td>
</tr>
<tr>
<td>Africa</td>
<td>6.9</td>
</tr>
<tr>
<td>Total</td>
<td>453.3</td>
</tr>
</tbody>
</table>

It is predicted that the global development of telecommunications in 1990s' will keep the similar level as in 1980s'. However, the major market will continue to shift from the developed countries to the developing countries, especially in Asia and Latin America.

2.2 The current situation in the developed countries and the undeveloped countries

Telephone is the basic telecommunications service in the world. Total telephone quantity, telephone quantity per one hundred population, total switching capacity, and switching capacity per a hundred population are the major indexes to show the telecommunications level in a country. Table 2.4 shows the total number of telephone and
switching capacity in the world. Table 2.5 shows the statistical data of telephone in the developed countries. Table 2.6 shows the statistical data of telephone in the developing countries. All data were collected from 1990 to 1992.

Table 2.3 Total Telephone Number and Switching Capacity in the World

<table>
<thead>
<tr>
<th>Total Number of Telephone</th>
<th>Total Number of Telephone per 100 People</th>
<th>Total Switching Capacity</th>
<th>Total Switching Capacity per 100 people</th>
</tr>
</thead>
<tbody>
<tr>
<td>over 750 million</td>
<td>15</td>
<td>over 500 million</td>
<td>10.5</td>
</tr>
</tbody>
</table>

Table 2.4 Statistical Data of Telephone in the Developed Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Total Number of Telephone</th>
<th>The Number of Telephone per 100 People</th>
<th>Total Switching Capacity</th>
<th>Switching Capacity per 100 People</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>125 million</td>
<td></td>
<td>50.58</td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td>52 million</td>
<td></td>
<td>42.06</td>
<td></td>
</tr>
<tr>
<td>UK</td>
<td>37 million</td>
<td>66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>32 million</td>
<td></td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>28 million</td>
<td></td>
<td>49.12</td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>32 million</td>
<td>55.5</td>
<td>22 million</td>
<td>38.7</td>
</tr>
<tr>
<td>Canada</td>
<td>15 million</td>
<td></td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>19 million</td>
<td>48.7</td>
<td>13 million</td>
<td>32.5</td>
</tr>
<tr>
<td>Australia</td>
<td>8 million</td>
<td></td>
<td>32.5</td>
<td></td>
</tr>
<tr>
<td>Holland</td>
<td>10 million</td>
<td>65</td>
<td>7 million</td>
<td>45.1</td>
</tr>
<tr>
<td>Sweden</td>
<td>6 million</td>
<td></td>
<td>66.8</td>
<td></td>
</tr>
</tbody>
</table>
Table 2.5  Statistical Data of Telephone in the Developing Countries.

<table>
<thead>
<tr>
<th>Country</th>
<th>Total Telephone Quantity</th>
<th>Telephone Quantity per 100 people</th>
<th>Total Telephone Capacity</th>
<th>Telephone Capacity per 100 People</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td></td>
<td></td>
<td>2 million</td>
<td>1.0</td>
</tr>
<tr>
<td>India</td>
<td></td>
<td></td>
<td>4.6 million</td>
<td>0.5</td>
</tr>
<tr>
<td>Former USSR</td>
<td>37 million</td>
<td>13</td>
<td>25 million</td>
<td>9.5</td>
</tr>
<tr>
<td>Indonesia</td>
<td>1.7 million</td>
<td>0.95</td>
<td>1.4 million</td>
<td>0.74</td>
</tr>
<tr>
<td>Brazil</td>
<td>14 million</td>
<td>9.54</td>
<td>8.9 million</td>
<td>6.01</td>
</tr>
<tr>
<td>Mexico</td>
<td>9.4 million</td>
<td>11.08</td>
<td>4.7 million</td>
<td>5.57</td>
</tr>
<tr>
<td>Tailed</td>
<td>1.5 million</td>
<td>2.69</td>
<td>1.2 million</td>
<td>2.09</td>
</tr>
<tr>
<td>Egypt</td>
<td>2 million</td>
<td>3.87</td>
<td>1.7 million</td>
<td>3.27</td>
</tr>
</tbody>
</table>

From Table 2.4, Table 2.5, and Table 2.6, we see that the switching capacities per 100 people are between 35 to 60 in the developed countries, much greater than the average number in the world, while the switching capacities per 100 people in the developing countries are much lower than the average number.

This big difference between the developed countries and the developing countries reflects the imbalance in telecommunications development. Since 35% to 60% switching capacity rate is almost "saturation status," it indicates that the potential telecommunications market should be in the developing countries in the next few decades.
2.3 Telecommunications Development in Asian "Four Dragons"

Asia "Four Dragons", Korea, Taiwan, Hong Kong, and Singapore, were four fastest growth developing countries in the last three decades. In the same periods, the growth rate in telecommunications in the four countries was as twice as GDP growth rate. Telecommunications development was a guide in national economics in these four countries. The fast growth in telecommunication, in turn, support the national economic growth. Since "Four Dragons" has some similarity with China, recalling the development in both telecommunications development and national economic growth in the last three decades will be helpful to predict the telecommunications market in China in the next two decades.

After three decades' effort, the telecommunications in the four countries, in either service or network equipment, is close to that in the developed countries. The number of telephone per 100 people is about 40. The long distance directly call rate is 100%. Table 2.7 shows the telecommunications industry in "Four Dragons" during 1960s' and 1980's.

Table 2.6 Telecom Industry in "Four Dragons"

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>GDP per person</th>
<th>The growth rate of GDP</th>
<th>Growth rate of telephone</th>
<th>The number of telephone per 100 people</th>
<th>The growth rate of the Number of Telephone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea</td>
<td>1962-1966</td>
<td>$130</td>
<td>7.9%</td>
<td>17.8%</td>
<td>0.96-1.3</td>
<td>15.5</td>
</tr>
<tr>
<td></td>
<td>1967-1971</td>
<td>$300</td>
<td>9.8%</td>
<td>15.7%</td>
<td>1.4-2.3</td>
<td>13.2</td>
</tr>
<tr>
<td></td>
<td>1972-1976</td>
<td>$750</td>
<td>10.2%</td>
<td>17.1%</td>
<td>2.7-4.58</td>
<td>14.1</td>
</tr>
<tr>
<td></td>
<td>1977-1981</td>
<td>$1500</td>
<td>10.0%</td>
<td>20.6%</td>
<td>5.42-11.16</td>
<td>20.0</td>
</tr>
<tr>
<td>----------------</td>
<td>-----------</td>
<td>-----</td>
<td>-----------</td>
<td>-----</td>
<td>-----------</td>
<td>-----</td>
</tr>
<tr>
<td></td>
<td>8.7%</td>
<td>9.9%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Taiwan</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1953-1963</td>
<td>7.7%</td>
<td>11.1%</td>
<td>10.22%</td>
<td>0.58-1.0</td>
<td>6.20%</td>
<td></td>
</tr>
<tr>
<td>1964-1973</td>
<td>$237</td>
<td>11.1%</td>
<td>19.44%</td>
<td>1.3-4.8</td>
<td>15.62%</td>
<td></td>
</tr>
<tr>
<td>1974-1979</td>
<td>$1132</td>
<td>8.4%</td>
<td>23.30%</td>
<td>5.7-14.0</td>
<td>19.69%</td>
<td></td>
</tr>
<tr>
<td>1980-1986</td>
<td>$3654</td>
<td>7.1%</td>
<td>11.48%</td>
<td>17.1-31.1</td>
<td>9.85%</td>
<td></td>
</tr>
<tr>
<td><strong>Hong Kong</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1961-1970</td>
<td>$350</td>
<td>11.4%</td>
<td>16.5%</td>
<td>3.6-14.7</td>
<td>13.6%</td>
<td></td>
</tr>
<tr>
<td>1970-1980</td>
<td>$4386</td>
<td>9.6%</td>
<td>12.4%</td>
<td>14.7-32.6</td>
<td>9.3%</td>
<td></td>
</tr>
<tr>
<td>1980-1986</td>
<td>$6768</td>
<td>6.2%</td>
<td>6.6%</td>
<td>32.6-44.8</td>
<td>5.4%</td>
<td></td>
</tr>
<tr>
<td><strong>Singapore</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1960-1970</td>
<td>$532</td>
<td>8.9%</td>
<td>10.4%</td>
<td>5.9-7.8</td>
<td>14.98%</td>
<td></td>
</tr>
<tr>
<td>1970-1980</td>
<td>$4156</td>
<td>9.0%</td>
<td>16.1%</td>
<td>7.8-29.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1980-1986</td>
<td>$7500</td>
<td>5.4%</td>
<td>7.8%</td>
<td>6.75</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The experience of the development of "Four Dragons" is a good mirror to both telecommunications and national economic development of China in the next two decades. From Figure 2.6 and the economic development of "Four Dragons", we can learn the following lessons.

First, the decision department in "Four Dragons" realized the importance of developing telecommunications and the barrier of poor telecommunications infrastructure to national economic development. Since the telecommunications is a heavy investment industry, increasing investment was an important feature in telecommunications development in the four countries. For example, the telecommunications investment from 1986 to 1988 in Korea is about 2.00% of GDP. The investment from 1971 to 1980 is about 1.21 % of GDP. In the same period, the telecommunications investment in the developed countries is about 0.9% of GDP, while the investment in the developing countries is about 0.34 % of GDP.
Second, in the history of the world telecommunication, the growth rate of telephone is higher than the national economic growth rate in the fast growth period of a country. In the last three decades, the GDP growth rate in "Four Dragons" was around 7% to 10%. While the growth rate of telephone in the same period was over 15% from 1977 to 1981, the average GDP growth rate in Korea was about 10%, while the growth rate of telephone was over 20%. From 1974 to 1979, the average GDP growth rate in Taiwan was 8.4%, while the growth rate of telephone was 19.7%.

In the period from 1965 to 1985, for the average GDP growth rate in "Four Dragons", Korea is 6.6 %, Taiwan is 8%, Singapore is 7.6%, Hong Kong is 6.1 %. While for the growth rate of telephone, Korea is 16%, Taiwan is 15.5 %, Singapore is 11.1 %, and Hong Kong is 11 %. The average growth rate of telephone is as twice as the average GDP growth rate in the same period. Figure 2.3 shows this difference.

Figure 2.3 GDP Growth and Telecom Growth in "Four Dragons" During 1965 to 1985
Chapter 2: World Telecommunications Market

Third, the telecommunications industries in "Four Dragons" were highly controlled by government or the state-run companies. In Taiwan, it was monopolized by government. In the other three countries, it was monopolized by state-run companies. There are several advantages of state monopoly:

- The government could put more money into the important sections in the initial development phase and supply the basic telephone service in the short time.

- Monopoly is beneficial to the establishment of the standard of the telecommunications network and the quality of the network, especially in the initial and the fast growth phase of telecommunications network.

2.4 Global Non Telephone Market

In the past few years, the global non telephone market increased about 25% a year, while the telephone market increased only 4% to 5% a year. Table 2.7 shows the change of global telecommunications market between 1990 to 1995.  

<table>
<thead>
<tr>
<th>Countries or regions</th>
<th>Year</th>
<th>Telephone</th>
<th>Digital Transmission</th>
<th>Image Transmission</th>
<th>Telegram</th>
<th>Mobile Phone</th>
<th>others</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>1990</td>
<td>86.2%</td>
<td>5.8%</td>
<td>2.7%</td>
<td>2.6%</td>
<td>2.4%</td>
<td>0.3%</td>
</tr>
<tr>
<td></td>
<td>1995</td>
<td>79.2%</td>
<td>5.6%</td>
<td>5.4%</td>
<td>1.3%</td>
<td>7.7%</td>
<td>0.8%</td>
</tr>
<tr>
<td>British</td>
<td>1990</td>
<td>85.4%</td>
<td>3.3%</td>
<td>0.2%</td>
<td>2.8%</td>
<td>7.0%</td>
<td>1.3%</td>
</tr>
<tr>
<td></td>
<td>1995</td>
<td>83.7%</td>
<td>4.7%</td>
<td>0.3%</td>
<td>0.7%</td>
<td>9.1%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Italy</td>
<td>1990</td>
<td>88.5%</td>
<td>6.2%</td>
<td>0.1%</td>
<td>3.0%</td>
<td>2.0%</td>
<td>0.3%</td>
</tr>
<tr>
<td></td>
<td>1995</td>
<td>84.5%</td>
<td>5.9%</td>
<td>0.8%</td>
<td>1.1%</td>
<td>6.9%</td>
<td>0.5%</td>
</tr>
</tbody>
</table>
Chapter 2: World Telecommunications Market

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Spain</td>
<td>86.5%</td>
<td>84.5%</td>
<td>10.6%</td>
<td>8.0%</td>
<td>0.1%</td>
<td>0.6%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.5%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.1%</td>
</tr>
<tr>
<td>West</td>
<td>91.2%</td>
<td>85.7%</td>
<td>4.7%</td>
<td>4.9%</td>
<td>0.2%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Germany</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.6%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>2.0%</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.3%</td>
</tr>
<tr>
<td>Europe</td>
<td>87%</td>
<td>82.9%</td>
<td>5.5%</td>
<td>5.7%</td>
<td>0.6%</td>
<td>1.3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.4%</td>
<td></td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>4.0%</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.6%</td>
</tr>
<tr>
<td>US</td>
<td>88.7%</td>
<td>81.6%</td>
<td>4.8%</td>
<td>5.2%</td>
<td>0.1%</td>
<td>0.5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.4%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.7%</td>
</tr>
<tr>
<td>Japan</td>
<td>84.7%</td>
<td>77.8%</td>
<td>8.4%</td>
<td>8.8%</td>
<td>0%</td>
<td>0.1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.3%</td>
<td></td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>3.7%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2%</td>
</tr>
<tr>
<td>Canada</td>
<td>88.8%</td>
<td>81.3%</td>
<td>4.5%</td>
<td>4.7%</td>
<td>0%</td>
<td>0.6%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.5%</td>
<td></td>
</tr>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>5.2%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1%</td>
</tr>
<tr>
<td>Others</td>
<td>85.0%</td>
<td>82.9%</td>
<td>9.2%</td>
<td>9.9%</td>
<td>0.1%</td>
<td>0.1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.1%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.4%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.2%</td>
</tr>
<tr>
<td>Global</td>
<td>87.1%</td>
<td>81.8%</td>
<td>6.1%</td>
<td>6.6%</td>
<td>0.2%</td>
<td>0.6%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.5%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.9%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.2%</td>
</tr>
</tbody>
</table>

The development of the global telecommunications is different in the different countries and regions. However, two trends are consistent. The first one is the decrease of telephone and telegram services. The second one is the increase of mobile phone service. It is estimated that the trends will continue in the next decade.

As the number of mobile phones increased dramatically, Telefax and E-mail doubled almost every two year. In the North America, the number of faxing is 13 million in 1990, it increased to 32 million in 1993 and 58 million in 1995. In West Europe the number of faxing is 6.1 million in 1990, 10 million in 1993, and 36 million in 1995. In both North America and Europe, the number of faxing increased about 5 times in the last five years. (Figure 2.4) There are
2.5 Summary
Chapter 2: World Telecommunications Market

In this chapter, I list some data in global and Asia “Four Dragons” telecommunications market and development. We can see the following trends.

First, the developed countries experienced more than one century development in telecommunications. The market is almost in “saturation status” even there are still some new segments, for examples, cellular phone, fax machine, etc. However, the developing countries are in the initial phase of telecommunications development. The potential market in the developing countries is huge.

Second, the percentage of equipment market will decrease, while the percentage of service market will increase. At the same time, the traditional telephone market will decrease, while cellular phone will increase.

Third, the history of telecommunications development in “Four Dragons” in the last three decades shows the importance of telecommunications in developing countries, especially in the fast growth period. It also indicates that the developing countries with a fast growth GDP may provide a good telecommunications market.

China experienced a fast growth in both national economics and telecommunications in the last decade. China has a similar culture background with “Four Dragons”. The development in China telecommunications in the next two decades may follow the history of “Four Dragons”. The population of China is as twenty times as total population of “Four Dragons”. The huge population, fast growth, and economic size in China will be a good investment market for the telecommunications companies of the developed countries.
Chapter Three

China Telecommunications Investment and Policy

In Chapter One I recalled the fast growth in both national economic and telecommunications in China since the economic reform started by Deng, Xiaoping in 1978. With a poor telephone penetration rate and an extremely low computer access rate, China lagged far behind the rest of the world in information and telecommunication infrastructure. However, the country’s potential market is evidenced by its great progress in recent years. The government expects to reach an 8% penetration rate (100 million switching capacity) by the end of the century, which means adding at least 10 million switching capacity every year. Taking a close look at the history of developing telecommunications infrastructure in the last decade, we can find out some important features.

3.1 Policies to Attract Foreign Investment

China has been remarkably successful in attracting foreign investment. By the early 1990’s, China was the largest recipient of foreign direct investment in the developing world. At first, a cordon sanitary was erected around foreign investments, with the establishment in 1980 of four Special Economic Zones in the south, offering tax and other incentives. Such privileges were later extended across most of the country. By the 1990’s, and especially after Deng, Xiaoping’s “southern tour” in 1992, localities were competing with each other to offer foreign investors the most attractive terms. By the end of 1994 there were 206.096 registered enterprises with foreign capital in China. The total capital is $382.4 billion, of which $196.3 billion was provided by foreign partners. According to the
Chapter 3 China's Telecommunications Investment and Policy

Ministry of Foreign Trade and Economic Cooperation, the total volume of contracted foreign investment between 1979 and 1994 was $304.6 billion, spread across about two hundred thousand projects. Of the total investment, 81.9% was committed to coastal areas and provinces, with Guangdong province alone accounting for 33.7% of total committed investment.

One important source of foreign funds was Hong Kong, with 68% of total committed investment (most of them are passed through Hong Kong by foreign investors). In more recent years, the volume of Hong Kong investment has included a sizable: in order to qualify for tax exemptions, and to make it easier to take capital out of the country, a large number of Chinese investors have established Hong Kong shell companies and posed as “foreign investors”. Taiwan was the second most important foreign investor with 8.3% of the total. Singapore accounted 2.2%. The USA was, in the period of 1979 to 1993, the second largest foreign investor after Hong Kong, with 6.5% of the total. It was followed by Japan, with just 4%. The figure 3.1 shows the component of foreign investment in China.

![Pie Chart](image)

Figure 3.1 The Component of Foreign Investment in China
3.2 Heavy Investment in Telecommunication

Since 1978, the telecommunications investment/GDP in China increased 14 times. Table 3.1 lists the GDP, telecommunications revenue, GDP growth rate, and telecommunications investment/GDP rate from 1978 to 1994.²

Table 3.1
Comparison of Telecom Investment and National Economic Growth in China

<table>
<thead>
<tr>
<th>Year</th>
<th>GDP (b. yuan)</th>
<th>Telecommunications Revenue</th>
<th>GDP growth rate</th>
<th>Telecommunications Investment/GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1978</td>
<td>360</td>
<td>1.165</td>
<td>11.7 %</td>
<td>0.115 %</td>
</tr>
<tr>
<td>1979</td>
<td>400</td>
<td>1.255</td>
<td>7.6 %</td>
<td>0.106 %</td>
</tr>
<tr>
<td>1980</td>
<td>450</td>
<td>1.334</td>
<td>7.9 %</td>
<td>0.085 %</td>
</tr>
<tr>
<td>1981</td>
<td>480</td>
<td>1.952</td>
<td>4.4 %</td>
<td>0.148</td>
</tr>
<tr>
<td>1982</td>
<td>520</td>
<td>2.041</td>
<td>8.8 %</td>
<td>0.176</td>
</tr>
<tr>
<td>1983</td>
<td>580</td>
<td>2.226</td>
<td>10.4 %</td>
<td>0.170</td>
</tr>
<tr>
<td>1984</td>
<td>690</td>
<td>2.503</td>
<td>14.7 %</td>
<td>0.195</td>
</tr>
<tr>
<td>1985</td>
<td>850</td>
<td>2.960</td>
<td>29.7 %</td>
<td>0.227</td>
</tr>
<tr>
<td>1986</td>
<td>970</td>
<td>3.286</td>
<td>8.1 %</td>
<td>0.252</td>
</tr>
<tr>
<td>1987</td>
<td>1100</td>
<td>3.884</td>
<td>10.9 %</td>
<td>0.278</td>
</tr>
<tr>
<td>1988</td>
<td>1400</td>
<td>5.4</td>
<td>11.3 %</td>
<td>0.262</td>
</tr>
<tr>
<td>1989</td>
<td>1600</td>
<td>6.481</td>
<td>4.4 %</td>
<td>0.315</td>
</tr>
<tr>
<td>1990</td>
<td>1800</td>
<td>8.165</td>
<td>4.1 %</td>
<td>0.332</td>
</tr>
<tr>
<td>1991</td>
<td>2000</td>
<td>20.44</td>
<td>7.7 %</td>
<td>0.430</td>
</tr>
<tr>
<td>1992</td>
<td>2400</td>
<td>29.09</td>
<td>12.8 %</td>
<td>0.677</td>
</tr>
</tbody>
</table>
Assume that both GDP and telecommunications investment in 1977 were 1.00. Figure 3.2 shows the increase in GDP and telecommunications investment during the period from 1978 to 1994 (inflation is considered). During this period, the GDP increased about 4 times, while telecommunications investment increased about 58 times. It is expected that during 1995 to 2000, telecommunications investment /GDP will be kept in the range between 1.3 to 1.6.\(^3\) Table 2 and table 3 show the telecommunications investment / GDP in some developed countries and Korea.\(^4\) Compared with the developed countries, the 1.3 - 1.6 rate of Telecommunications investment / GDP is almost as twice as the rate in USA, Japan, UK, West Germany, and Canada. That implicates again a big potential market and an investment chance in China.
Figure 3.2
Telecom Investment / GDP during 1978 to 1994 in China

Table 3.2
Telecom Investment / GDP in major developed countries

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>0.9 %</td>
<td>0.789 %</td>
<td>0.628 %</td>
<td>0.564 %</td>
</tr>
<tr>
<td>Japan</td>
<td>0.959 %</td>
<td>1.044 %</td>
<td>0.811 %</td>
<td>0.59 %</td>
</tr>
<tr>
<td>UK</td>
<td>0.932 %</td>
<td>0.993 %</td>
<td>0.707 %</td>
<td>0.676 %</td>
</tr>
<tr>
<td>West Germany</td>
<td>0.86 %</td>
<td>0.585 %</td>
<td>0.668 %</td>
<td>0.859 %</td>
</tr>
<tr>
<td>Canada</td>
<td>1.02 %</td>
<td>1.163 %</td>
<td>0.817 %</td>
<td>0.666 %</td>
</tr>
</tbody>
</table>
Chapter 3 China's Telecommunications Investment and Policy

<table>
<thead>
<tr>
<th>Average</th>
<th>0.934 %</th>
<th>0.915 %</th>
<th>0.726 %</th>
<th>0.671 %</th>
</tr>
</thead>
</table>

Table 3.3
Telecom Investment / GDP in Korea

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tele Invest / GDP</td>
<td>2.17%</td>
<td>1.95 %</td>
<td>2.14 %</td>
<td>2.46 %</td>
<td>1.71 %</td>
</tr>
</tbody>
</table>

After 15 years' heavy investment in telecommunications, the revenue and asset of telecommunications have increased dramatically. Figure 3.3 shows the changes of telecommunications revenue / GDP and telecommunications asset / total asset in China during 1978 to 1994.
China began to heavily invest in telecommunications from mid 1980s. The telecommunications revenue increased dramatically from early 1990s. Comparing with the situation in "Four Dragons" and considering the huge population and economic development imbalance in China, it is expected that this heavy investment will last two decades.
3.3 Fast-Increasing Foreign Investment

While China has recently enjoyed double-digit economic growth and fast-increasing foreign investment, updating its backward information networks has been recognized as one of its top priorities to sustain the economic development. Action has been taken at various levels. Telecommunications is a heavy investment industry. Before 1978, 90% investment in telecommunications was coming from government. During the period from 1978 to 1994, the telecommunications investment increased about 58 times (see Section 3.1) while the GDP grew 4 times. Diversifying the source of telecommunications investment is an important action to keep the fast-increasing in telecommunications industry. Table 3.4 shows the change of telecommunications investment during this period. Two visible changes are the government investment decreasing from 90% of total investment to 0.6% and the foreign investment increasing from 0% to 16%. Figure 3.3 shows these changes from 1981 to 1994. In foreign investment, major sources are coming from government loan and international finance organization, like World Bank. The rate of commercial loan is very low.

Table 3.4
Change of Telecommunications Investment from 1978 to 1994

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>billion yuan</td>
<td>0.414</td>
<td>0.708</td>
<td>0.916</td>
<td>5.9</td>
<td>16.1</td>
<td>40.4</td>
</tr>
<tr>
<td>Investment</td>
<td>rate of total</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Government</td>
<td>billion yuan</td>
<td>0.372</td>
<td>0.371</td>
<td>0.36</td>
<td>0.476</td>
<td>0.476</td>
<td>0.65</td>
</tr>
<tr>
<td>Investment</td>
<td>rate of total</td>
<td>90%</td>
<td>52%</td>
<td>39%</td>
<td>8%</td>
<td>3%</td>
<td>2%</td>
</tr>
<tr>
<td>Government</td>
<td>billion yuan</td>
<td>0.0029</td>
<td>0.395</td>
<td>1.09</td>
<td>5.19</td>
<td>5.1</td>
<td></td>
</tr>
</tbody>
</table>
### Chapter 3 China’s Telecommunications Investment and Policy

<table>
<thead>
<tr>
<th>Loan</th>
<th>rate of total</th>
<th>0.4 %</th>
<th>7 %</th>
<th>7 %</th>
<th>13 %</th>
<th>6.6 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign</td>
<td>billion yuan</td>
<td>0.0048</td>
<td>1.021</td>
<td>2.15</td>
<td>4.098</td>
<td>12.44</td>
</tr>
<tr>
<td>Investment</td>
<td>rate of total</td>
<td>0.6 %</td>
<td>17 %</td>
<td>13 %</td>
<td>10 %</td>
<td>16 %</td>
</tr>
<tr>
<td>Internal</td>
<td>billion yuan</td>
<td>0.041</td>
<td>0.308</td>
<td>0.549</td>
<td>4.02</td>
<td>12.2</td>
</tr>
<tr>
<td>Investment</td>
<td>rate of total</td>
<td>10 %</td>
<td>48 %</td>
<td>60 %</td>
<td>67 %</td>
<td>75 %</td>
</tr>
<tr>
<td>Others</td>
<td>rate of total</td>
<td></td>
<td>1 %</td>
<td>2 %</td>
<td>2 %</td>
<td>2.8 %</td>
</tr>
</tbody>
</table>

![Figure 3.3](image_url)

**Figure 3.3**

Government Investment and Foreign Investment

### 3.4 The Government Policy to Foreign Investment in Telecommunication

The Ministry of Posts and Telecommunications (MPT) is in charge of China’s telecommunications industry. Since China’s government recognized the importance of
developing telecommunications infrastructure to national economic growth, the State Council established a joint committee on information, headed by vice-president Jiahua Zou and including representatives of all the relevant ministries and large users.

On May 3, 1993, MPT reiterated the principles regarding the foreign investment in telecommunications as the following points:

- Any foreign countries, corporations, and individuals will not allowed to directly engage in any public telecommunication infrastructure.

- The telecommunications factories could cooperated with foreign countries or cooperation in joint venture.

- All telecommunications industries and service are encouraged to absorb foreign technology, buy modern equipment, and get foreign investment.

The three principles restrict the foreign engagement in telecommunications management, but allow the foreign companies to sell equipment and invest in telecommunications in form of joint venture. In the next few years, the major market in telecommunications for foreign telecommunications companies are joint venture or selling equipment, technology, software.

3.5 Current Situation of Joint Venture in Telecommunication

As any other countries, the first phase to boost the telecommunications infrastructure is to install telephones. In order to install more telephones, switching board is a bottleneck. From early 1980s, MTP of China realized that the ability and technology to
produce switching board in China could not satisfy the fast-increasing telephone need. It considered to introduce the advanced production line from the western countries to improve its technology and switching board production ability in form of joint-venture. The first joint-venture was between Shanghai Bell Telephone Cooperation and Belgium Bell Cooperation in 1985. The output of switching board was over 2.8 million lines in 1993. The table 3.4 shows the major joint venture in producing switching board in China.  

<table>
<thead>
<tr>
<th>Location</th>
<th>Shanghai</th>
<th>Beijing</th>
<th>Tianjing</th>
<th>Qindao</th>
<th>Chendu</th>
<th>Guangtong</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign Investment</td>
<td>Belgium Bell Corp.</td>
<td>Germany Siemens</td>
<td>Japan NEC</td>
<td>US AT&amp;T</td>
<td>US AT&amp;T</td>
<td>Canada No.Telcom</td>
</tr>
<tr>
<td>Joint Ratio</td>
<td>60 % 40 %</td>
<td>60 % 40 %</td>
<td>60 % 40 %</td>
<td>60 % 40 %</td>
<td>60 % 40 %</td>
<td>60 % 40 %</td>
</tr>
<tr>
<td>Total investment</td>
<td>$150 million</td>
<td>$65 million</td>
<td>64 million</td>
<td>100 million</td>
<td>130 million</td>
<td>130 million</td>
</tr>
<tr>
<td>Output (lines)</td>
<td>4.4 million</td>
<td>2 million</td>
<td>1 million</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

3.6 Summary

In order to satisfy the huge demand of telecommunications in domestic market while China enjoyed a fast-increasing GDP and foreign investment, China realized that updating its information infrastructure is a top priority to keep its economic development. Since 1980, China heavily increased its investment in telecommunications and utilized various
sources of investment. The two features in this period is to decrease government directly investment and increase foreign investment. Since China still insists in keeping government control to telecommunications infrastructure and service. The major channels for foreign investment will possibly be in forms of joint venture, selling equipment, and supply service. Since 1985, facing the shortage of switching board production ability and backward technology, China began to introduce switching board production line in form of joint venture. After ten years’ effort, the producing ability of switching board has been reached to 10 million lines per year. This capacity will basically satisfy the increasing demand in switching board capacity in the next few years. It is also a good start to introduce foreign technology in telecommunications for China. Furthermore, both China and the western countries got some experience through this joint venture.

After 15 years’ fast increasing in telecommunications, the telephone penetration of China has reached 5 %. However, this is still below than the world average level 15 % and far below than the 40 % level of the developed countries and “Four Dragons”. This indicates that the potential market in China’s telecommunications is still huge. Recalling the investment in the last ten year in China and adjusting the strategy will be beneficial for foreign investor in the next decade.
Chapter Four

Motorola in China

4.1 Paging Market in China

The first paging service started in China in 1984 in three cities: Shanghai, Guangzhou, Chenzhen. Because the technology is generally more economical for both the end-user and operator, it flourished rapidly across the country. In 1985, only 10 cities had introduced paging services; but by the end of 1995, as many as 1500 cities were covered by paging networks. By the end of 1996, most of the cities above county level will be covered by paging.

As of mid 1995, there were about 34 million pagers in Asia and an estimated 37-38 million at the end of the year. China leads with approximately 11.4 million each, Taiwan with two million subscribers and Hong Kong with approximately 1.5 million users. Figure 4.1 and Figure 4.2 shows World paging markets in December 1995 and Asia-Pacific paging markets in July 1995.

![Figure 4.1 World Paging Markets](image1)

![Figure 4.2 Asia-Pacific Paging Market](image2)
In 2000, the paging market in Asia will reach 80 million users, with China owning almost 50 percent of them. Japan is estimated to have about 12.8 million paging users by the turn of the century, followed by Korea - 12 million, and Taiwan -- four million.

4.2 Cellular Phone in China

China’s cellular phone providers signed up more than two million new subscribers in 1995, making China the world’s fourth-largest cellular market. Tailing only the United States, Japan, and the United Kingdom, China now boasts over four million cellular subscribers. A projected five-fold increase in cellular subscribers and estimates of nearly 20 million subscribers by the end of the decade have made China a particularly promising market for sales of cellular equipment. Figure 4.3 shows Cellular subscribers in China, 1993 to 2000.

* Projected figures

Figure 4.3  Cellular Subscribers in China, 1993 - 2000
Chapter 4 Motorola in China

Virtually every leading international telecommunications company is pursuing opportunities in China. In 1995, China digital cellular market experienced its strongest growth to date, as LM Ericsson, Motorola Inc., Nokia Telecommunications, Siemens AG, Northern Telecom (Asia) Ltd. and AT&T Corp. all hustled to capture market share. Beijing permits foreign companies to sell telecom equipment and handsets in China and provides after-sales service, but limits network operation to two domestic carriers, the Ministry of Posts & Telecommunications (MPT) and China United Telecommunications Corp. (Unicom). In 1995, Unicom launched a cellular network to compete with MPT monopoly over telecom services, Unicom opened the possibility that foreign firms, too, might one day be able to operate cellular networks as well as sell equipment in China.

If the current rate of expansion continues, China will be home to more than 8.7 million cellular subscribers and rank as the world’s second-largest cellular market by 1997 (see Figure 4.3). With the promise of such robust growth in high-tech telecommunications, it seems that before long, wherever the average Chinese citizen travels, by bicycle, train, or car, a phone will be easily in reach.

4.3 Motorola in China

Motorola is one of the world’s leading providers of wireless communications, semiconductors and advanced electronic systems and services. Major equipment business include cellular telephone, two-way radio, paging and data communications, personal communications, automotive, defense and space electronics and computers. Communication devices, computers and millions of other products are powered by Motorola semiconductors.
Motorola started its business in China from mid 1980s. At that time, Chinese government just started to heavily invest in improving its infrastructure of telecommunications network. Pages and mobile phone market were almost empty. Motorola realized the importance of this market to the rapid economic development in China and the potential market, based on the experience in the other Asian countries and regions, like Japan, Hong Kong and Taiwan. It immediately moved most of its employees from its Hong Kong office to Beijing, built manufactures in Tianjin (the third largest city in China) and opened Motorola University in Beijing to train its Chinese employees.

After one decade investment, Motorola monopolies the pages and mobile phone market. By mid-1995, Motorola supplied cellular systems in 22 out of 29 provinces in China. The major partners of Monorola are Ministry of Post & Telecommunications, Fujian Post & Communications, Nanton Unicom, Shengzheng Unicom, Gangshu Communications Equipment Factory, Hunan PTA (Post & Telecommunications Administration), Sichuan PTA, Shanxi PTA, Ganshu PTA, etc. In 1993, There were 40.5 million pages in worldwide, with 44% in US, 16% in Japan, 13% in China, and 17% rest of world, most of them in China were supplied by Motorola. It is estimated that in 1999, 111.2 million pages will be used worldwide, with 31% in US, 26% in China, 10% in Japan, and 23% rest of world. Figure 4.4 presents the ratio and changes of the pages market supplied worldwide in 1993 and 1999.
Figure 4.4 The ratio and changes of the pages market supplied worldwide in 1993 and 1999.

In 1994, the sale in China and Hong Kong counted about 8% out of total 22.2 billion sales of Motorola. Figure 4.5 represents 1994 market sales of Motorola by region. It is clear that China market has been one of the important foreign markets for Motorola. It may have 15% market of all sales for Motorola in 2000.

![Pie Chart](image)

Figure 4.5 1994 Market Sales by Regions of Motorola

The profit of Motorola in China remains a secret. The company released all kinds information about the amount of contracts in China and revenue in China, but it never released any information about the profit in China.
4.4 Successful Experience of Motorola

Motorola is a successful example for the foreign telecommunications companies which want to invest in China’s market. When we approach the 21st century and China set a new telecommunications plan for the next five and fifteen years, wrapping up Motorola’s experience in China will be helpful for both China’s telecommunications industry and the foreign telecommunications companies which have been entered or plan to enter the market.

First, Motorola did a good marketing research for China’s telecommunications market. The company realized that the mobile phone market would be a potential huge market in China in the mid 1980’s. The analysis was based on the similarity between the cultures in Mainland China and Hong Kong, Taiwan, the poor telecommunications infrastructure in China at that time, as well as the huge demand for telephones in China. This brought out the decision of Motorola to bravely move into China’s mobile telephone market in 1980’s. The early move gave Motorola a big advantage to monopoly the market and make profit.

Second, since the early time Motorola moved into China, the company realized the importance of the government role in China’s telecommunications market. In the last ten years, Motorola have been keeping a good relationship with the government, especially MPT. The good relationship was a essential prerequisite for Motorola to set up and expand its business in China.

Third, the telecommunications market is a huge market in China. Because of the government’s restriction and policy, it is impractical for a foreign company to try to cover all segments in China’s telecommunications market. How to use the company’s core competencies to focus on the parts of the market is a essential factor to be successful in
China. In the last ten years, Motorola persisted in the equipment of mobile phone market. The persistent effort in this segment rewarded the company with a good image and reputation in the end users in China. The image, along with the quality of Motorola’s equipment and the management structure which combines the western style and Chinese culture, became a very popular brand name in China;

Fourth, Motorola realized the culture difference between China and the western countries and the impact of this difference to the business in China. The strategy of Motorola is to hire Chinese with the western education and work experience to manage local Chinese. The first step of Motorola in the early 1980s’ is to move most of the employees in its Hong Kong office to Beijing to start its business. After that, the company sent its Chinese manages to Motorola University in Chicago. As the business expanded dramatically, Motorola immediately set up Motorola University in Beijing to train its middle level managers. The investment in educating Chinese employees gave chances for Chinese employees to learn the western management style and for the company to bridge the gap between the two different cultures and systems.

Fifth, like most of the foreign companies in China, Motorola successfully keeps its Chinese employees in the company. There are two reasons as follows:

- The salary package from Motorola or the other foreign companies are in the top of compensation compared with the other positions. Usually it is three or four times higher than the same positions in the state own companies or academic positions.

- The telecommunications technology in China is far behind than that in western companies, like Motorola. The training system, high technology, as well as western management structure constitute a good environment for employee’s career.
Due to the above reasons, Motorola attracts and keeps a bunch of excellent Chinese engineers, scientists, businessmen in the company. These employees make good contributions to the investment of Motorola in China.

Finally, the company's persistence in the China market contributed to its success. In 1989, most of the foreign companies in China hesitated about the future of China's economic reform and even withdrew their offices in China. Motorola persisted in expanding its business in China. This gave the company a big advantage to monopoly the market. In the near future, like any developing countries, there are still many unstable factors to China's economy. There will be some hardship for both Chinese and foreign companies in the near future. However, after enduring many disasters in the last 100 years, the 1.2 billion Chinese people want to add to the standard of living and open the door to the world. In the long run, China will have a more open market to the world.
Chapter 5

Doing Business in China

5.1 Economy Power of China and the Future

China became the world’s third largest economy, with a per capita income of $1,600 and a total economy of $1.7 trillion after the International Monetary Fund (IMF) changed the way in which it calculated its national statistics in 1993. What is the real power of China’s economy and what is the future of National economy in China?

First, it is impossible for China to become a economic power in two or three decades. Japan took about one hundred years to move from a developing country to a developed country. In history, no country had more than 4 % GDP growth in one hundred period.¹ To estimate the future of China’s economy, we can use two kinds of starting points. The first one is to start with China’s per capita GDP as measured by international currency value of about $400. The second one is to start with its per capita GDP of about $1,600 measured by purchase power, which is measured by what it would cost in America to buy what the average Chinese does buy. The per capita GDP of Japan is about $38,000. Assuming that China will grow at 6 percent per year and Japan will grow at 3 percent per year, which is one percentage point below what it has achieved in the past 100 years). In year 2100, China still has a per capita GDP less than 20 percent if we calculate at the first starting point and less than 70 percent that of Japan starting with the $1,600. Figure 5.1 shows the changes of per capita GDP for Japan and China if we start with per capita GDP of $1,600 for China.
Figure 5.1  Changes of Per Capita GDP for Japan and China in the Next One Hundred Years

Second, China was growing rapidly while most of the rest of western countries were in the midst of a recession or a period of slow growth. Furthermore the phase I development in China is much easier than the further development in phase II after the fast development in the last fifteen years. Measured by market exchange rates, the GDP of China only accounts for about 1 percent of world GDP. In the next decade, it is very hard for China to keep its two digit growth. It will slow down while the growth in the rest of the world has already accelerated and will accelerate further.

Third, China Government realized the long run of developing a country to a developed country from a developing country. In the long term goal set by China Government a few years ago, China planed to reach the living level of the middle developed countries between 2030 to 2050. Compared with Figure 5.1, it was a practical plan.
Fourth, China has about 80% population in countryside, only about 20% population in cities. To implement modernization and reach the level of the current developed countries. The population in countryside should be decreased to below than 20%. Assuming 10 million peasants will move into cities every year in China. This transition will take about 100 years.

Fifth, China will have a bigger GDP than Japan even its per capita GDP is much lower than Japan since Japan has 120 million people while China has 1.2 billion people. China will be a great power politically and militarily in the twenty-first century. Military power depends upon absolute size. To be a world economic player one must have a high per capita GDP and be technologically sophisticated. Now the most export of China consist of agriculture product, clothes, toy, etc. It will take relative long time to modernize its infrastructure of industry, communication, and transportation. However, it should be recognized that China has play certain role in the international business. In table 5.1, the total exports and imports of goods is about one third of Japan and twenty percent of US in 1994. It is a big component in the world business. Furthermore, foreign trade as percentage of GDP in China is 38.8 percent, much higher than in Japan and USA. (See Figure 2.2)

| Table 5.1 Comparative Economic Indicators, 1994 |
|---------------------|-------|-------|-------|-------|-------|-------|
|                    | China | India | Russia| Brazil| Japan | USA  |
| GDP ($b)            | 509.6 | 288.4 | 286.4 | 622.0 | 4,591 | 6738 |
| GDP per head ($)    | 425   | 310   | 1,930 | 3,910 | 36,730| 25,820|
| Exports of goods ($bn)| 102.6 | 26.6  | 51.6  | 43.8  | 384.2 | 502.5|
| Imports of goods($bn)| 95.3  | 28.9  | 37.7  | 33.5  | 238.2 | 668.6|
| Foreign trade as % of GDP | 38.8 %| 19.2 %| 31.0 %| 12.4 %| 13.6 %| 17.4 %|
In summary, China was in the fastest economic increasing period in history. Even it will still a long run for China to move into a developed country, the population and economic size will be a huge market for western countries. Both optimism and practice are necessary for successfully doing business in China.

5.2 Analysis of China Telecommunications Market

China is a country with five thousand years' history and two thousand years' feudal dictatorship. The whole national economic is still under central plan and the telecommunications industry is controlled by government (See Chapter Three). In order to do business in telecommunications with China, recognizing the specialty and the Chinese culture is very important to western countries.
Chapter 5 Doing Business in China

1. Government

China is still a central plan economic system, especially in telecommunications market (see Chapter 4). Chinese government plays the roles of supplier, buyer, regulation maker, as well as competitor. This makes the government have an extremely high power in regulation and market. It also makes foreign investors impossible to do business in China without a relationship with Chinese government. In the near future, Chinese government will still play an important role in foreign investment and joint venture with the telecommunications companies in western countries. Since Chinese government realized the importance of building up telecommunications infrastructure and put it in the top priority, the policy of Ministry of Post and Telecommunications is the ground for the western companies to understand. Any changes in the policy and regulation may influence the market for foreign investors, increasing chance or risk. China is still in the process of economic reform, foreign companies should pay attention to both political stability and regulations of MTP.

Furthermore, the relationship with Chinese government and MTP is a very important factor to enter telecommunications market in China. Since all telecommunications infrastructure and service are controlled by Chinese government, foreign companies could only do their business in this market under the control of MPT. The good relationship and multi-understanding are necessary for foreign companies to invest in the market in long term.

2. Buyer Power

As stated above, all telecommunications is controlled by MPT and the government in China. It owns the third largest telecommunications network. The size and monopoly give MPT a large buyer power. In the last ten years, most of the large telecommunications
companies in the world like AT&T, France Telecom, and Motorola tried hard to penetrate the market. The multi-sources of sellers and the volume it bought gave MPT a big advantage to leverage its size and volume purchases to obtain price concessions and other favorable terms. The domestic production power (even with lower quality) also add more room to negotiate. All of these give foreign companies hard time to penetrate the market and make profit.

The buyer power also gives MPT a room to negotiate with several companies to get a good price or technology transmission. The government control, long term negotiation and different culture really gave the western companies a hard time. As a result, some companies spent a lot of money to penetrate China’s market, but could not get in after several years’ negotiation, or some other companies which already entered the market could not make profit after several years’ operation since the low profit margin and buyer’s power.

3. Competition

Competitive markets are economic battlefields. Currently there are two kinds of competition in the telecommunications market.

The first is the competition among foreign companies. Due to the huge market and fast-growth in the last decade in China. Most of the major telecommunications companies make every effort to penetrate China market. The competition among them are serious.

The second is the competition between foreign companies and the companies in China. One goal of MPT for importing telecommunications equipment and joint-venture manufacture is to absorb the advanced technology and to increase the rate made by China in the equipment component. Since the low cost of Chinese labor and the power of MPT
to make buying decision, the competition between the product by local manufactures and foreign companies become the second battlefield in telecommunications market.

4. Substitute

The substitute of telecommunications market in China is an interesting point. The rapid development of telephone in most of western countries was in 1920’s. Fax machine and electronic mail developed in 1980s’. Cellular phone and internet were very hot in the last few years. In China, telephone, fax machine, electronic mail, and cellular phones entered the market almost at the same time. For example, the rapid development of both telephone and cellular phone in China started in the middle of 1980s’. By the end of 1994, the total number of cellular phone is number 8 in the world.(See Table 5.3) Now it is estimated to be around No. 4, over Germany, Italy, Canada and Australia.

Table 5.2 The Largest 10 Cellular Phone Markets in the World

<table>
<thead>
<tr>
<th>Country</th>
<th>User Number (million)</th>
<th>Number of Cellular Phone / Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>24.5</td>
<td>9.55</td>
</tr>
<tr>
<td>UK</td>
<td>3.5</td>
<td>6.05</td>
</tr>
<tr>
<td>Japan</td>
<td>3.4</td>
<td>2.73</td>
</tr>
<tr>
<td>Germany</td>
<td>2.44</td>
<td>3.04</td>
</tr>
<tr>
<td>Italy</td>
<td>2.2</td>
<td>3.82</td>
</tr>
<tr>
<td>Canada</td>
<td>1.7</td>
<td>6.17</td>
</tr>
<tr>
<td>Australia</td>
<td>1.53</td>
<td>8.72</td>
</tr>
<tr>
<td>China</td>
<td>1.43</td>
<td>0.12</td>
</tr>
<tr>
<td>Sweden</td>
<td>1.39</td>
<td>16.2</td>
</tr>
<tr>
<td>France</td>
<td>0.87</td>
<td>1.53</td>
</tr>
</tbody>
</table>
Chapter 5 Doing Business in China

The mix of the start of the different generations of telecommunications facilities makes China's telecommunications market more complex. However, the substitute of the different generations could make more chances. Motorola invested in cellular phone market in China from the late of 1980's and successfully monopolized the equipment market. It shows that the market in China is complex, but the dynamic market imply more chances.

5. Timing

Entry timing is another factor to do business in China's telecommunications market. China is in process to transfer from the central control economic to free market. The basic idea of economic reform of Deng, Xiaoping is to finish this transformation in a long run other than overnight like in Eastern Europe. In the long term transformation, new regulations and policies to free the market come out every year. Since the high competition among the foreign companies and the standard of telecommunications infrastructure, the first move could give company big advantage to monopoly the market and make profit. The first move of Motorola in China's cellular phone market is a good example of importance of the first move and timing in China's telecommunications market.

6. Marketing Analysis

- **Market Size:** China has 1.2 billion population. The average living standard is much lower than the average of the world. However, since the economic reform started in the early 1980's, some coast cities and "Special Zones" developed much faster than the other regions. The demand in these cities are much higher than the others. Out of 1.2 billion, even five percentage population is a bigger market than the total of Hong Kong,
Chapter 5 Doing Business in China

Taiwan, and Singapore. In Table 5.1, the number of cellular phone per one hundred people in China is only 0.12, but the total market size is still No.8 in the world. The number of telephone per one hundred is about 4% in China, but China has the third largest telecommunications network in the world. The potential market size in China is very big as considering 1.2 billion population.

- Industrial Structure

  China is an industrializing economies. Its telecommunications industry is fast-growing. But most of its telecommunications equipment is imported from western countries or made by joint-venture companies.

- Income Distribution

  Income distribution in China is a structure with low, medium, high incomes. Most families in the countryside are low income; Most of families in cities are medium income; High incomes are movie, music, dance stars; stock speculators; lawyers; private entrepreneurs, individual business owners, CEO’s of new business firms; Chinese representatives in foreign-funded firms.

7. Entry Barrier

  The entry barriers in telecommunications market in China is pretty high. There are several reasons for this high entry barriers.

- Economies of Scale

  Scale economies in China deter entry because they force potential entrants either to enter on a large-scale basis or to accept a cost disadvantage.

- Regulatory Policies
Chapter 5 Doing Business in China

Government regulation and the power of MPT limit or even bar entry by requiring licenses and permits. The relative regulated industries like banking, insurance, radio and television stations feature government-controlled entry.

- **High Switching Costs for the Customer**
  Most of the telecommunications equipment have their standard. Usually there exist several standards for each equipment. This makes a high switching cost for the customer and the change of telecommunications infrastructure.

- **Difficulty to access distribution channels**
  Most of distribution channels are still owned by Chinese government. This is another barrier to foreign entry.

8. Labor Cost

Labor cost is another thing the foreign companies should realize. The average salary per month for a worker is about 500 yuan ($60 per month). The $800 per year labor cost is really a very cheap in any western countries. However, they must realize the following situations.

First, Chinese only pays about one percent of their income to their apartment. More than 98% percent of the apartments in cities are still belong to the government. The residents only need to pay less than one dollar per month for rent.

Second, Chinese in cities almost pay nothing for their medical expense. Even China is promoting a health reform, the medical payment is still very low.
Third, most of schools and factories supply a free Kidgarden for its employees’ children.

Fourth, the labor cost in China, especially in big cities and “Special Economic Zones” increased more than twenty-five percent per year in the last few year. The wages increased dramatically as the benefits by government decreased.

Fifth, the inflation rate in China in 1990s’ is around 15 percent. This is another burden for both employees and employers.

Foreign companies in China usually are required to supply some of the above service to their employees. Some companies in big cities even supply buses for transportation of their employee’s since the heavy traffic in the big cities in China. The cost of these service are usually more than the basic salary. For example, Motorola spent several million dollar for the bus expense for their employees in Tian Jing every year. Foreign investors must be aware of these extra cost, the potential high growth rate and high inflation in the cost calculation of their business plan.

9. Management

In the thirty years from 1949 to 1980, All business in China is controlled by government. The manager of a company is also an government and Communist Party officer. Most of the majors in economics, finance, law, and business are shut down. After the economic reform, especially in the last few years, China opened a first dozen business schools and law schools in the major universities in China. The Sloan School of Management of MIT will open a video education in the business schools of Fudan University and Tsinghua University in China. Deputy Premier Zhu, Rongji stated that China need three hundred thousand MBA and three hundred thousand lawyer with formal
law school training in the next century. However, since the first MBA and J.D. just graduated from the school in the last few years and the number of MBA and J.D. are very small at this moment. Most managers in MPT and companies have neither formal business training nor international business experience. This, sometimes, makes the senior managers in the foreign telecommunications companies very hard to communicate with Chinese managers.

10. Education

The thirty years’ central control economic system in China did not successfully develop the national economy, but it did successfully develop its education system. The students in high school and colleges have good training in mathematics, physics, and science. However, most students and employees have little training in team work and other necessary education in a free market. In the process of economic reform, the employee training in a joint-venture and a foreign company is another key for the company to successfully do business in China. Motorola opened “Motorola University” in Beijing a couple of years ago. The university trains most of its Chinese middle level managers for one and half years. At the same time, the company sends some of the managers to Chicago to have three to six months’ training. This may be another factor for Motorola to successfully do its telecommunications business in China.

11. Culture

As mentioned above, China has five thousand year history and two thousand year feudal dictatorship. The different background and history make a big difference in culture. This also influences the ways the people do business. One good example is that the personal relationship in China and the other Asian countries, like Korea, Taiwan, Japan, is one of the most important keys in business. The companies in some Asian countries, like
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Korea, Japan, are easier to penetrate the market in China. One factor is that these countries have the similar culture as that in China. The culture could be a barrier for business. It is necessary to understand the difference in culture between China and western countries, and consider this difference when companies make strategy decision.

12. Bank

Bank plays a key role in international business. China has not allowed private bank at this time. All banks which deal with international business are controlled by government. Furthermore, since the long time isolated economic policy, the banks lack international business experts, regulation, and experience.

13. Reform in Foreign Trade and Application to WTO

Since the prolonged stalemate over its application to join the World Trade Organization (WTO), China has announced that it is planning to reform its trade regime. The measures, announced at the Osaka APEC meeting by President Jiang, Zemin in 1995, will come into effect in 1996. They include the following.

- Tariff cuts on more than 4,000 lines which would lower the simple average tariff 30%.
- Elimination of quotas, licensing and other controls on nearly 200 lines, or over 30% of the commodities subject to the restrictions.
- Foreign exchange transactions by foreign companies to be “incorporated in the banking system of foreign exchange procurement ad sale”.
- Shanghai and other cities to be “pilot bases” for joint ventures.
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- A trial scheme for forming joint retailing ventures with foreign partners to be extended.

However, it is not clear whether this package, which will lower the average tariff rate from about 35% to about 25%, will be sufficient to convince the USA that China has gone far enough to ensure that it enters the WTO on what the USA considers to be a reasonable basis. What does suggest is that China has striven to make concessions and that this may be its limit.

14. Currency Reform

The Chinese currency, the renminbi, is still not fully convertible although the authorities have emphasized that convertibility is their goal. For most of the 1980’s China adopted a policy of parallel exchange rates. An “official” rate covered the imports of some state-owned enterprises, and that offered to foreign residents and tourists, who had their own legal tender, called foreign exchange certificates (FECs). Meanwhile, a growing proportion of foreign trade was conducted at a lower rate closest to a true market price, available on a number of “swap” markets. Usually, there would be a third, parallel market rate as well, reflecting the demand for foreign exchange. At the end of 1993 the swap and official rates were merged and the FECs abolished. A primitive interbank market was set up, although most traders still found themselves having to use the swap markets. One effect of the reforms has been the steady devaluation of the renminbi, although it remained stable for more than a year after central government intervention in July 1993. It fell from Rmb8:SDR1 at the end of 1993 to Rmb12.3:SDR1 at the end of 1994. During 1995 the Chinese currency appreciated in annual average terms against a weak US dollar. At the beginning of January 1996 the exchange rate was Rmb 8.32:$1.
15. Joint Venture

Joint venture is a major approach for western companies to invest in telecommunications in China. Compared with the joint venture of US-Japan, China has the following advantages to make the joint venture successful:

- Both parties have high motivation to be successful in the joint venture. China is eager to absorb high technologies from western countries, while western countries are highly motivated to invest in the huge telecommunications market in China.

- The big gap in telecommunications technology between China and western countries makes less conflict in joint venture. China wants to get high technologies from western countries to improve its poor telecommunications infrastructure. While western countries want to reduce risk in investing in China. The benefits in both parties are satisfied through joint venture. While in the joint venture between Japan and US, the technologies in two countries are in the same level. The benefits in two parties are easy to conflict.

- China has a huge market with 1.2 billion population. The investors of western countries have a long term view in investing in China. This makes easier to handle some short term conflict of the two parties.
Chapter Six

A Proposed Strategy

In the last chapter, I analyzed the current business environment in China, especially in telecommunications sector. This chapter will present a strategy to do telecommunications business in China.

6.1 Work with Chinese Government

Chinese government has been aggressively supporting and guiding the telecommunications industry through short-term and long-term policies designed to improve telecommunications infrastructure and business environment for foreign investors. In the central control economy, especially telecommunications market, government plays a key role for foreign investors. In order to do business with China, you must deal with government.

First, the companies which want to invest in China’s telecommunications industry should keep a good relationship with China’s government, like MPT. It is a necessary condition for the companies.

Second, since the government’s policies and regulations in China are not completely transparent. The companies should understand these policies and regulations, through every possible channels.
Chapter 6: A Proposed Strategy

Third, the different social systems and cultures between China and western countries cause the different approaches to do business, especially when the companies deal with the government. The companies should make every effort to understand the government structure and style.

The Chinese government plays an important role not only when the foreign companies start to enter the Chinese market but also in all process the companies do business in China. Currently China is in the reforms of tax, trade, bank, and currency. Any changes in these areas may influence the business, positively or negatively. Understanding these changes and the effect to the business is a key factor for the foreign companies to enter Chinese market, expand their business, and make profit.

6.2 Market Need Analysis

Market need analysis is necessary in the dynamic business environment in China. The need category should be the first step for market need analysis. There are some specialization in market needs in China’s telecommunications.

First, since the government controls all infrastructure and service, all sales in equipment sector will be directly to government. The needs will be heavily influenced by the financial situation of the government and the national plan. Furthermore, the government could leverage the market needs to the foreign imports by changing the tax or price policies to domestic industry and foreign investors. It is really very hard to analyze this kind market need. However, it is unavoidable for foreign investors to do business in telecommunications equipment market in China.

Second, in order to do business in form of joint-venture in telecommunications market in China, market analysis in segmentation has three benefits for the company.
• To identify segments large enough to serve profitably.

• To identify segments that can be efficiently reached by marketing efforts.

• To help develop marketing programs.

In the middle of 1980’s, the average number of telephones per head in China is below than 1 %. It was hard to image that China has a big market need for cellular phone. But due to the less infrastructure of cellular phone compared with the huge telephone network. The cellular phone has the possibility to increase 100 percent every year to satisfy the rapid growth of communication demands. In segmentation analysis, after several years’ economic reform, some business men with high income have the needs and could afford cellular phones. Motorola found this market after a careful market analysis, it developed an efficient market plan, entered the market, expanded its business, and monopolied the equipment market in a few years.

6.3 Competitive Analysis

The telecommunications market is very competitive since most major telecommunications companies in western countries want to enter this huge market and the telecommunications companies subsidized by Chinese government utilize its low labor cost and technology transfer from western countries to compete with the companies in western countries. A good competitive analysis is really necessary for any company which wants to enter the telecommunications market in China or revise its strategy.

In the analysis, except the traditional entry barrier, buyer power, supply power, substitute and government analyses, the environment and competitor analyses are very necessary. China will still be in process of economic reform, this makes the competitive environment unstable. It requires any foreign companies in China to design and revise their
strategies around a deep and insightful appreciation of the arena in which they were competing. A good competitive analysis could increase the ability to recognize opportunities in the market and to have the clarity of direction and the flexibility necessary to exploit these opportunities.

6.4 Market Share

Getting market share in telecommunications market in China will be correlated with higher ROI (return on investment) and low cost because of learning curve effects. As the Boston Consulting Group’s Growth/Share Matrix (figure 6.1), it is best to have a stable, high market share in some businesses to find the cash need of other businesses. In doing business in China, fast growth in some segment, getting more market share, and making profit is a start strategy used by some foreign investor.

The BCG Business Portfolio Chart

![BCG Business Portfolio Chart]

Figure 6.1 The BCG Business Portfolio Chart
Chapter 6: A Proposed Strategy

The *Star* is a high-market-share business in a high-growth industry. Stars grow and finance themselves.

*Cash Cows* are high-market-share businesses in low-growth industries. These gems provide the cash to fund other businesses.

*Dogs* are small-market-share businesses in low-growth industries. These businesses are going nowhere and consume corporate cash and management’s time in an attempt to stay competitive.

*Question Marks* are small-market-share businesses in high-growth industries.

### 6.5 Brand Name

How to use company’s brand name is another factor in the whole strategy. Some western countries could not believe that, after the thirty years’ isolation policy between China and western countries, how Chinese respect the product, quality and brand name of western countries. Successfully using this psychology factor and company’s brand name could reach a good marketing effect. For example, Intel was very successful to translate “Pentium” to Chinese in advertising. The bright Chinese name “Pentium” helps Intel to promote all products in China.

### 6.6 Localization

In Chapter Five, I analyzed some specialization in culture, business environments, and government role to business between China and the western countries. After the thirty years’ isolation policy of China and the long history of Chinese culture, it is very hard for a western company to completely understand these specialization in China. Hiring Chinese managers in the branches in China and the joint-venture manufactures is a strategy of most
companies to adopt. What kind Chinese managers companies should hire and what kind roles companies expect them to play, however, are what I will mentions in the following.

First, the companies should hire Chinese who have education and work experience in mainland China. The Chinese in Taiwan, Hong Kong, and Singapore use the same language as the Chinese in mainland. But language is only one part of the gap between western country and China. The differences in culture, government role and social structure constitute bigger gap. It is impossible for the Chinese who lived and had education in Taiwan, Hong Kong, and Singapore to understand these and bridge the gap. After Motorola expanded its business in China in the early 1990s, the company immediately hired large number of Chinese managers and sent them to Motorola University in Beijing, China and Chicago, US. These middle level managers successfully help the senior managers to understand Chinese culture, government, employees and to make business decision.

Second, the companies should try to hire Chinese who have education and work experience in both western countries and mainland China. There Chinese, after working and studying in China and western countries, have a deep understanding of the gap between China and western countries. They could understand the strategy of the company which is doing business in China and find out the gap between the company strategy and the real business environment in China.

6. 7 Marketing Strategy

Doing business in China is a big challenge for any foreign companies. A marketing strategy is another key for success. Among three general strategies captured by Porter: cost leadership, differentiation, and focus. Focus and cost leadership are more important in telecommunications market in China.
Chapter 6: A Proposed Strategy

- **Focus**

  The strength of a focus strategy is derived from knowing the customer and the product category very well. Companies establish a “franchise” in the market place. MPT controls the telecommunications market, one of its policies is not to allow a single foreign company to monopoly all areas in China’s telecommunications. As analysis in the previous chapters, the market in China is very complex, it is very hard for a foreign company to do correct marketing analysis and make right marketing strategy in every areas. Using company’s core competencies to focus on one or a few areas is a practical strategy. One reason of the success of Motorola in China is belong to its strategy focusing on cellular phone market. Another example is the marketing strategy of McDonald in China. Due to the one child policy, most of young families in cities in China has only one child. The child becomes the center of all family. The half income of the families spends on this child. McDonald utilizes its traditional advantage in attracting young kids to advertise. The strategy focusing on young kids is very successful in China. It makes McDonald to become one of the most popular fast food restaurants in big cities in only a couple of years.

- **Low Cost Position**

  Due to the fact of high competition in telecommunications market in China, buyer power is very high. Low cost position becomes another key in telecommunications market. Since the high labor cost in the developed countries, joint-venture is a good approach to combine the low labor cost advantage in China and the high technology in the developed countries. After Motorola entered China’s market, the company immediately moved its manufactures into Tianjin, China. The cost reduction gave Motorola big advantage in keeping its cellular phone leadership in China.
6.8 Language - Chinese Interface

English is a very common language in the world, but only a very low percentage of Chinese could read English or the other popular foreign languages. Interface becomes a barrier for directly importing foreign telecommunications equipment. It took a while for foreign investors to realize this point. A modern equipment without Chinese interface is a big disadvantage in the competitive environment. Put Chinese interface development in both joint-venture and direct exporting in the top priority is an important factor in China's telecommunications market. Motorola and Intel are successful examples in making effort to develop difficult Chinese interface.

6.9 Location

China is a big country with huge population. The living standard between the coast region and the interior has big difference. For example, the average number of telephone per head in Beijing and Shanghai is over 20%, but it is below than 2% in some interior provinces. Table 6.1 lists Gross domestic product by region in 1994.

Table 6.1 Gross Domestic Product by Region of China in 1994

<table>
<thead>
<tr>
<th>Region</th>
<th>% Share, 1994</th>
<th>Average % real growth, 1990 - 1994</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guangdong</td>
<td>9.3</td>
<td>18.3</td>
</tr>
<tr>
<td>Jiansu</td>
<td>8.9</td>
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</tr>
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<td>Shangdong</td>
<td>8.5</td>
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<tr>
<td>Liaoning</td>
<td>5.7</td>
<td>8.8</td>
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</table>
### Chapter 6: A Proposed Strategy

<table>
<thead>
<tr>
<th>Province</th>
<th>2023</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Henan</td>
<td>4.8</td>
<td>10.9</td>
</tr>
<tr>
<td>Hebei</td>
<td>4.7</td>
<td>12.7</td>
</tr>
<tr>
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<td>10.8</td>
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<td>Hubei</td>
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<td>Fujian</td>
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<td>Jiangxi</td>
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</tr>
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<td>Tibet</td>
<td>0.1</td>
<td>8.2</td>
</tr>
</tbody>
</table>
Another feature of the economic in China is that in some provinces, like “Special Zones”, the policy and regulation are relatively looser. It become really important for foreign investor to do good research in government regulation, economic growth, and transportation for the different areas and choose the good places after considering difference factors.

6.10 Training

Since the middle of 1980s, most of the major telecommunications companies in the western countries have built up their branches, sales office, manufactures in China. They hired thousands of employees in China. As I mentioned in the last Chapter, most of these employees do not have modern business training. They lack some basic team work and management knowledge. Training becomes a necessary step to make them qualified to serve for the companies. The experience of Motorola to build up Motorola University in Beijing is a successful strategy in making effort to train Chinese employees for the foreign companies.

6.11 Persistence

The telecommunications market in China is very dynamic. The political stability, government regulation, as well as some other factors like human resources, make this market very complex and unstable. Commitment, consistency and determination in stately implementation are the power to realize the goal of investors in telecommunications in China. Motorola continued its investment in China after 1989, which gave the company big change to expand its business in a less competitive environment and led its competitors in a short time.
6.12 Profit

The goal of doing business in China is to make profit. One problem for foreign investors in telecommunications market of China is that only a few companies make profit after several year’s investment. There are different kinds of reasons: currency system, labor cost, market, etc. However, how to make profit in telecommunications market of China is essential for all western investors in the next decade.

6.13 Summary and Framework

From Section 6.1 to Section 6.11, a framework like the following could represent the proposed strategy in China’s telecommunications.

![Diagram of proposed strategy framework]

Figure 6.2 The Framework of the Proposed Strategy
Government should be the center of the strategies for all foreign telecommunications companies. Market need, competitive analysis, market share, brand name, localization, market strategy, language, and location are eight important components. While training and persistence could put the strategy into effect.
Chapter 7 Conclusion

Chapter 7

Conclusion

China, with its 1.2 billion population and fast economic growth, is a huge economic size and market. Although it will still take long time for China to develop into a country with a middle living standard, the potential market size is attractive to the investors from western countries.

After ten years' fast development in telecommunications infrastructure, China has already had one of the largest telecommunications networks in the world. Considering the low rate of the number of telephones per one hundred people (see Chapter 1 and 3), fast growth demand along with the economic growth, as well as heavy investment in this area (see Chapter 3), China will be a potential huge telecommunications market in the next one to two decades.

In the last decade, most of the foreign telecommunications companies experienced some hardship to enter China's market and to make profit. The hardship and barriers are attributed to the following factors:

First, China is still in a central control economic system, especially in the telecommunications sector. Government played and will still play an important role in this market. Since the different system between the western countries and China, as well as the relative nontransparent government policy to foreign investors, developing a good relationship with government is the first step to do business in China.
Chapter 7 Conclusion

Second, the business environment in China is not only different from the western countries, but also different from the other Asian countries and regions, like Taiwan, Hong Kong, and South Korea. Failure in understanding this special environment is one of the major reasons for struggle in doing business in China.

Third, the core competencies of the telecommunications companies in the western countries is the advanced technology with strong R&D resources. How to transfer the core competencies to advantages in the special business environment in China is a key factor to be successful. The Motorola's experience in transferring its advanced technology into advantage in the mobile phone market in China is a successful example.

Fourth, the competition in China's telecommunications market is very high. The competition is not only among the western companies, but also between the western companies and China's telecommunications industry. Ignorance of the severity of this competition will bring about failure in this market.

The complex business environment in China resulted in the barriers and hardship for foreign telecommunications companies. After experiencing this hardship in the last decade, the companies should examine and adjust their strategies. In this way, the hardship in the past years could be a good experience for its success in China's telecommunications market in the future.
Reference

Bibliography


Chapter 1: Introduction


2. *Cable-World*, March 27, 1995, p.27.


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Chapter 3: China Telecommunications Investment and Policy


Chapter 4: Motorola in China


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