STRATEGIC MARKETING PLANNING
OF THE PHARMACEUTICAL INDUSTRY
IN THE PEOPLE'S REPUBLIC OF CHINA

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ABSTRACT

Toward the era of 2000, a strategic vision of most multinational corporations (MNCs) is to pursue their geographical expansion to unexplored markets. The People Republic of China (PRC) signifies a prime business opportunity because of its sizable population and rapid economic growth.

There is no exception for pharmaceutical industry. In addition to the above two fundamental favorable factors, the attractiveness of the PRC is further fuelled by the improvement of intellectual property protection which is particularly important to research based pharmaceutical companies from strategic standpoint. As the threat of generic erosion can be delayed under the revised patent law, heavy investment to develop the brand is better justified for secure return.

In terms of Michael Porter’s structural analysis of competitive forces, the PRC pharmaceutical industry can be regarded as a four and a half star industry. The four stars stem from intensity of rivalry among competitors, threat of new entrants, threat of substitute products and bargaining power of suppliers.

Generally speaking, the competition among the major market players is very keen. However, due to sizable untapped potential and rapid economic growth, the PRC pharmaceutical market is still very attractive and is large enough to accommodate every player to be a winner.

The protectionism of government policy and heavy upfront capital investment of R&D are the two key entry barriers for new multinational pharmaceutical firms. This provides less erratic environment for the existing players to enjoy business growth and investment return.
Although Chinese herbal medicine and acupuncture are popular treatment methods in PRC, the trend toward western medicine is very positive because the training of western medicine is much faster and more systematic. Moreover, Chinese style treatment is generally less effective in the relief of acute diseases. Thus, the pressure from substitute product is not substantial.

The bargaining power of suppliers is very small because the most valuable component - the compound offering therapeutic effects is made from inexpensive raw materials which are being sold as commodity.

The only competitive force left less attractive is bargaining power of buyers because of two main reasons. Firstly, government policy protects local pharmaceutical firms by strongly discouraging imported finished products, and secondly, purchasing decisions made at distributor and pharmacist levels are usually based on price rather than product quality. These make extensive market penetration and attractive profitability relatively difficult.

Being the world’s leading pharmaceutical company, Merck ought to fully capitalize on this golden opportunity to establish a strong foothold in the PRC market to sustain its survival on a long term basis. In order to formulate a series of tailor-made competitive strategy, the strengths and weaknesses of Merck are evaluated. The key competitive edge of Merck arises from its existing strong product line, as well as its reputation of innovative research and development of novel drugs, while the most critical issue that should be carefully addressed is its entry being relatively late compared to other major multinational pharmaceutical company.

Apart from industry and company environment, several unique characteristics of the PRC market are also identified to supplement the overall analysis. This process is important because differences in country system and basic value will play a significant role in steering the strategy. These include government policy, economic
discrepancy, technological gap and cultural difference.

After thorough analysis has been made, a series of competitive strategy is recommended. It consists of entry strategy which suggests various alternatives for the PRC market entry, portfolio strategy which advises the approaches for product line management, targeting strategy which discusses the priority territory for Merck's product line and alliance strategy which proposes the possible alternatives of partnership with local pharmaceutical firms.

Lastly, the future of the PRC pharmaceutical market is briefly discussed. Since it is difficult to predict whether it will change for the better or for the worse, in order to compete successfully, it is crucial for Merck to proactively shape the industry to ensure the most positive environment for achieving its strategic goals in the PRC. The whole notion of strategic marketing planning is a long term and never-ending process.
# TABLE OF CONTENTS

## Chapter

### I. INTRODUCTION
- The Company Background 1
- The Appeal of PRC 3
- Scope and Objectives 5
- Structure of the Paper 5

### II. METHODOLOGY
- Michael Porter’s Model 7
- Evaluation of Porter’s Model 8
- Lessons from Case Studies 14

### III. INDUSTRY ANALYSIS
- Intensity of Rivalry Among Existing Competitors 15
- Threat of New Entrants 21
- Threat of Substitutes 32
- Bargaining Power of Buyers 33
- Bargaining Power of Suppliers 35
- Summary 35

### IV. COMPETITIVE STRATEGY
- Entry Strategy 38
- Portfolio Strategy 41
- Targeting Strategy 44
- Alliance Strategy 46

### V. CONCLUSION 49

## APPENDIX 53

## REFERENCES 62
CHAPTER I

INTRODUCTION

This chapter will briefly introduce the company background of Merck which covers the current performance and the future business challenge on a long term basis. This will be followed by an evaluation of the attractiveness of the People’s Republic of China (PRC) market in the context of Merck. With the understanding of the company and market to be pursued, a thorough discussion on the strategic marketing planning of Merck in PRC will be brought up in the subsequent chapters.

The Company Background

Merck & Co., Inc. (Merck), is an international, research-intensive health products company focusing on the discovery, development and marketing of important human and animal health products and specialty chemical. Among these product varieties, human ethical pharmaceutical products constitutes over 80% of Merck’s business.

The company traces its origins to Germany in 1668. Merck was established in the United States in 1891, began its research program in the 1930’s and rapidly became known for its achievement in pharmaceutical science. In 1992, Merck invested more than US$1 billion in research and development.

In addition to its leading position in pharmaceutical research and development, Merck can also manage to perform at its best in the areas of sales achievement and overall management. Merck is the largest pharmaceutical company worldwide achieving an annual sales over US$7 billion in 1992. It has recently been announced
that, for the seventh consecutive year, Fortune magazine named Merck the most admired corporation in the United States (Reese 1993). These are the solid evidences of the global reputation of Merck.

As other leading corporations regardless of which industry, Merck ought to expand in order to continue to grow. The commitment of new product development with strong R&D support is crucial. Of equal importance, geographical expansion to new markets is also critical in view of the slow growth of established markets like the United States, and Europe. Markets in the Pacific Rim are really attractive to Merck as they are undergoing the fastest period of economic expansion in history (Naisbitt and Aburdene 1990).

Although Merck has been well established from the global perspective, it is rather young in the Far East which excludes Japan. While most of other pharmaceutical companies have already had their own subsidiaries, Merck was still doing business through distributors or licensees arrangement after the reorganization in 1987 when active sales and marketing functions started.

Merck Sharp & Dohme (Asia) Ltd. is a subsidiary of Merck and is the regional office for nine markets in the Far East region, namely Hong Kong, Singapore, Malaysia, Taiwan, Thailand, Philippines, Korea, Indonesia and PRC. The marketing skill sophistication is a continuum with PRC at the least mature end because Merck was just involved in the giant market.

The business in PRC has not started until 1989 when licensing agreement was signed with a technoventure company. The sales revenue marked less than US$1.5 million in 1992 which was far from satisfaction.

In view of the strategic importance of PRC market to the long term survival of the company, Merck is considering to change the current business arrangement to make a significant success in PRC through a more aggressive approach.
The Appeal of PRC

Turning to the market attractiveness of PRC, the fundamental condition is its economic growth. Over the last decade, PRC has emerged as an important economic power and major trading nation. A window was opening to western trade, technology and investment which was an essential part of that reform. The nominal GDP achieved US$350 billion in 1991 and is expected to have a 5-year average growth of 6.5% (Howarth 1992).

Real GNP has grown by an average of almost 9% a year in the past 14 years (Rohwer 1992). If PRC continues to hit its growth targets, she will have matched the performance of Japan, Taiwan and South Korea during their fastest quarter-centuries of economic growth.

Deng Xiaoping’s visit to southern China in early 1992 reconfirmed the economic policy of reform and opening to the outside world as the road to lead China to strength and prosperity. The slogans, "to implement market economics of socialism" and "to build socialism with Chinese characteristics" are the top-down basic principles of the whole community.

Furthermore, the 14th Communist Party Congress held last October signified strong commitment to develop favorable economic environment for investment. The future of China from economic perspective is fairly optimistic.

In addition to rapid economic expansion, the PRC population marked 1.1 billion in 1990 at an estimated growth rate of 1.2% (China Market Atlas 1992). Of the total population, only 300 million (26%) are urban dwellers; about 2% numbers 22 million belong to middle to upper income group with annual income. Although the current middle/upper income group is very limited, the size which represents the latent market potential is growing with economy.
Besides favorable economic and demographic profile, PRC market is also considered to be stable politically. Despite the tragedy at Tiananmen Square, the economy has recovered so rapidly that it seems there is nothing which can hinder the growth. It is generally believed that the political situation of PRC tends to become more stable in the years ahead to gain the greatest economic benefits. Like the recent release of one of the prodemocratic students, Wang Dan, has shown a gesture of respecting human rights as a bargaining power for the renewal of Most Favored Nation (MFN). Political retrograde step should not happen again.

With over one-fifth of the world’s population, relatively stable political situation and an economy that is expanding at an average of more 6% each year, it is not questionable that PRC is potentially the world’s largest marketplace. Some analysts even believe its emerging economies may change the conventional world order.

At present, the health care in PRC is regarded as underdeveloped. It can be reflected from the funding of health care which accounted for only 1.1% of GNP in 1987 (Howarth 1992) as well as from the health care spending which was marginally over 1% of total consumer outlays in 1988 (Shaw and Woetzel 1992). Compared to more advanced Asian markets like Hong Kong and Korea, the percent of health care spending is significantly higher which is about 6-7% (Shaw and Woetzel 1992). There is correlation that the better the economy, the better the health care system which implies that the size of pharmaceutical industry is expanding with the economy.

Therefore, if the PRC economic growth can keep the current momentum, the prospect of the PRC pharmaceutical market is very promising and of strategic importance to multinational pharmaceutical companies. The growth of the pharmaceutical industry in the next decade is expected to be exponential because the percent of health care spending versus the total spending ought to be adjusted up to
match with that of advanced countries.

Due to the rapid economic growth, consumers will naturally pursue quality products. This will be a catalyst for the growth of the research-based drug industry in PRC. The following lists favorable factors to Merck:

- Tangible evidence of accelerated growth of health care systems leading to better basic health care infrastructure.
- Increasing degree of urbanization leading to increasing demand of modern western medicine
- Product line of Merck suited to a growing middle class in PRC

Scope and Objective

In order to fully capitalize the market potential of PRC, a strong organization should be established. With the current licensee arrangement, it cannot expect any dramatic growth in terms of sales revenue because the conflict of interest between Merck and the licensee seems very significant. A strong commitment in building the organization is essential to capitalize on the golden opportunity to become a leading multinational company in PRC. Therefore, Merck should establish a direct presence in PRC. The objective of the study is to recommend an optimal competitive strategy for Merck to materialize the above long term vision.

Structure of the Paper

To begin with, the paper will review in the next chapter the famous model of business strategy defined by Michael Porter (Porter) with respect to the concept of industry analysis and competitive strategy (Porter 1980, 1988). In addition, chapter II also uses two case studies to explore whether there are any unique features in the PRC context that should be identified in order to accomplish a thorough analysis. This is an essential step of the overall project because Porter’s model is established
based upon the advanced business environment of the U.S.. There are several inherent characteristics that PRC possesses which may affect the process of shaping the competitive strategy for Merck. The following points illustrate the key differences between PRC and U.S.:

. PRC is barely a developing country whereas U.S. is already a post-modern country. In the U.S., a lot of business norms or orders have been fairly mature.

. PRC is a communist country but U.S. is basically a democratic country. In PRC, one party in sovereignty has been practised for more than forty years.

. PRC inherits a high-context Chinese culture while U.S. originates in a low-context text culture (Keegan 1989). A detailed comparison of these two cultures is shown in Appendix I.

. Until early 1980’s when open door policy was introduced, PRC has implemented centrally planning economy in which the government owns most of the capital and makes many of the economic decisions for over thirty years. However, U.S. is typically running free market economy in which transactions between buyers and sellers take place with little or no government interference (Wonnacott and Wonnacott 1990).

It then comes to chapter III with the pharmaceutical industry analysis in PRC based on the five competitive forces. Following thorough analysis made and lessons learnt from the case studies, a series of strengths/opportunities and weaknesses/threat are to be lined up to develop the competitive strategy for Merck in chapter IV. Chapter V will finally conclude with the consideration of key issues identified and actions to be taken to ensure Merck to be successful in PRC.
Chapter II

METHODOLOGY

This chapter will introduce the concept of Porter’s model of industry analysis and its relation to the formulation of competitive strategy. In addition, it will use two leading MNCs which have noticeably demonstrated a success in PRC to appraise the validity of Porter’s model in PRC. Based on the framework, the possibility of Merck to compete successfully in PRC, the core question for this study, can be answered.

Michael Porter’s Model

Michael Porter is famous for the theory of how competitive forces shape strategy. The essence of strategy formulation is coping with competition. In the fight of market share, competition is not manifested only in the other players. From a broader perspective, competition in an industry is rooted in its underlying economics, competitive forces exist that go well beyond the established combatants in a particular industry. Customers, suppliers, potential entrants and substitute products are all competitors that may be more or less prominent or active depending on the industry.

The state of competition in an industry depends on five basic forces which are diagrammed in Appendix II. They are threat of new entrants, bargaining power of customers, bargaining power of suppliers, threat of substitute products, and rivalry among industry competitors. The collective strength of these forces determines the ultimate profit potential of an industry. It ranges from intense in industries like plastic, steel and paper, where no company earns outstanding returns on investment, to mild in industries like cosmetics, oil field services and equipment, and toiletries,
where there are relatively high returns (Porter 1980).

Once the forces affecting competition in an industry and their underlying causes have been diagnosed, the firm is in a position to identify its strengths and weaknesses. The crucial strengths and weaknesses from a strategic standpoint are the company’s posture vis-a-vis the underlying causes of each forces. Where does it stand against substitutes? Against the source of entry barriers? In coping with rivalry from established competitors?

An effective competitive strategy takes offensive or defensive action in order to create a defendable position against the five competitive forces. The possible approaches include:

1. Positioning the firm so that its capabilities provide the best defense against the competitive forces;
2. Influencing the balance of the forces through strategic moves, thereby improving the firm’s position; or
3. Anticipating shifts in the factors underlying the forces and responding to them, thereby exploiting change by choosing a strategy appropriate for the new competitive balance before rivals recognize it (Porter 1980, 1989).

Evaluation of Porter’s Model

There is no doubt that Porter’s model is very comprehensive in the structural analysis of a particular industry. However, the concept of this model was developed with reference to the U.S. environment which is basically a free market economy society and practises western culture.

If fundamental differences are existent in a society outside the U.S., some unique factors which might not be obvious in Porter’s model should be carefully considered in the process of strategic planning. In view of this need, two in-depth
interviews were conducted to identify those unique features in the PRC market. The two companies can be regarded as fairly successful MNCs in PRC and they are involved in different industries with one hi-tech computer vendor and one consumer product company.

**Hi-tech Computer Vendor**

In early 1980's when the open door policy began to be implemented, the PRC market had a hunger for high technology to expedite its rate of modernization. Up to now, technology is still in a great need. Those companies, like computer firms, which can provide advanced technology are considered to be beneficial to the country and are most welcome.

On the other hand, the PRC market was very attractive to computer industry because the great potential as virginland in early 1980's which promised high return on investment. Based on the recent performance, the PRC market really demonstrates exponential growth instead of a constant one from the developed countries like U.S. and Europe. In the coming ten years, a double digit growth is still expected.

Therefore, the computer vendor being interviewed established a wholly owned subsidiary in early 1980's with great emphasis in the areas of sales and service. Its mission is to provide advanced technology that PRC cannot access as well as training so that high quality local staff can be developed to enable localization.

One of the key successes of this computer vendor stems from its good relation with the PRC government which has been built up since the company entered the market. There are a lot of Joint Venture (JV) projects undertaken with various government ministries like Central Ministry of Agriculture, and key universities and institutes like Institute of Academy of Science in the development of software. Due to the characteristics of central planning economy, the government has the full
authority to allocate fund to technological investment.

Since "Guang xi" is an important element in the PRC context which is the fundamental basis of all aspects of business negotiation, this computer vendor has already taken a very successful first step of strategic importance in its future development in PRC. Meanwhile, the company is now being invited to take part in the eighth Five Year Plan (FYP) which provides numerous golden opportunities to promote its products to help the PRC government materialize the four modernization.

In addition, government policy of the country of origin in computer industry also plays an important role in shaping the competitiveness of a computer company in PRC. There was a rationale behind why companies, like IBM, selling mainframe computer products are less competitive in PRC. It was rooted in the restriction of the U.S. government in granting export license to mainframe computer products but not to mini-computers. This computer vendor which is strong in mini-computer networking capitalized on this competitive advantage to achieve early success in PRC. Even the restriction of exporting mainframe computer products may have been relaxed by now, these mainframe companies are still at a competitive disadvantage because their products are already outdated.

With respect to other competitive forces, it was well understood that the bargaining power of buyers was the strongest in early 1980's. In those days, the PRC economy was not prosperous enough to afford high priced products and customers were mainly ministries or institutes under government. Due to low affordable level and profile of customers, the prices of computers and related product packages were forced to drive down.

Moreover, copyright protection was seldom respected by buyers. Illegal software copies were made available very extensively which caused a substantial loss in the company during the initial period.
Since the economy has been growing for the last decade so rapidly that high priced products are much easier to accept and there are more commercial firms established in PRC which are also in need of high technology support. On the other hand, buyers learn to respect copyright because they understand that copyright is a kind of intellectual property and it is more worthwhile developing newer software program based on the available ones rather than just copying the basic programs. These changes make the bargaining power of buyers less important.

When year 2000 is approaching, the pressure has gradually shifted to threat of new entrants and industry rivalries in the PRC computer industry. Like automobile and home electric appliances, the competition from Japan is considered to be the greatest mainly because of the following reasons:

- The concept of success in most Japanese companies focuses on market share rather than profitability which may have a risk of dumping with extremely low prices.
- Japanese companies are very flexible in business strategies like extensive sponsorship which is very effective in building up "Guang xi".
- There is high level contact between Chinese and Japanese governments which usually affects the decision making process for important business deals and more seriously affects the government policy in favor of computer firms of Japanese origin.

In view of the future challenges, this computer vendor will take an approach of providing total solution to customers which builds on its company strength and fulfills the market needs. The company will offer hardware technology which requires integration to develop extensive network. Relevant training to ensure proper implementation and assistance in initiating program running will be provided as part of service package.
This strategy applies to both government and private sectors. On one hand, JV projects in the government sector should be enhanced to further strengthen the current customer base and on the other hand, the private sector has to be developed to cope with the exploding economic growth in the coming years.

In this case, apart from the basic application of Porter’s model, government policy is another important feature that should be included in order to account for the success of this computer vendor in the PRC market. In early 1980’s, its customers was confined to the PRC government which is the unique source of funding under the central planning economy system. Furthermore, the restriction of its competitors’ exporting activities by the U.S. government also affected the competitive structure of the PRC computer market. Therefore, government policy was almost the commander of competition in the PRC computer industry.

However, in Porter’s model, government policy is only an indirect factor affecting the competition in the context of free market economy. In the PRC context, the government can directly interfere the economic activities in the market. Therefore, possible excessive influence by the government policy should be thoroughly evaluated in the formulation of competitive strategy in PRC if the role of the government is important in that particular industry.

Consumer Product Company

The 1.1 billion population and the booming economy have been attractive enough to consumer product manufacturers to make an imperative stake in PRC. PRC is the strategic market to foreign consumer product marketers in terms of profit generation and being successful as a major player in Asia in the coming decades.

The reason is also very straight forward why PRC allows the entry of foreign consumer product firms even there are already a number of local producers. It is
because the standard of living is improving with economic growth. The need of consumers for products of higher quality and wider variety is increasing.

The company being interviewed started a JV operation in PRC five years ago. The venture is formed among the company itself, a local soap factory in Guangzhou and a Hong Kong company which has had successful experience in penetrating into PRC. Its global purpose of statement, to provide quality breakthrough products at reasonable prices, is also applied to the PRC market. Currently, there are a manufacturing plant situated in a city near to Guangzhou and regional sales offices in the key cities like Shanghai and Beijing.

The key factors leading to the success of this consumer product company stem from the following strategic decisions:

1. Cooperate with a right local partner who is open-minded and is willing to share the same mission to ensure each step is a right move.
2. Establish the plant in the Southern China instead of the traditional commercial and industrial city, Shanghai, where its key competitor, Unilever, is based.
3. Offer key necessities product line, like shampoo and soap, to ensure fast initial market acceptance.

Unlike hi-tech computer products, consumers products have lesser government interference and are competing as if in the free market economy which is the basis of Porter’s model. Nevertheless, there is some uniqueness in the PRC consumer market which will, to a great extent, affect the strategic decision on top of the features highlighted in Porter’s model.

First of all, there is a great technological gap in consumer product manufacturing between developed countries in the western world and PRC which belongs to developing category. The general public’s need is staying at a relatively primitive level. Secondly, the affordability level in PRC is still much lower than that
in advanced countries. There is no point to introduce those products far exceed the need of the majority of the people. Therefore, shampoo and soap are the product focus of this company in PRC. The overall economic and technological profile the targeted market is not included in Porter’s model.

Furthermore, the culture of the market in interest is not emphasized in the formulation of competitive strategy according to Porter’s framework. Cultural differences may become a competitive force due to misunderstanding. Therefore, a local partner is of paramount importance in narrowing the cultural gap so that a sort of blending strategy satisfying the foreign company and local people can be developed. This is common for those industries in which local players have been fairly mature.

**Lessons from Case Studies**

Based on the two cases, the key points that should be noted when designing the competitive strategy for Merck in the PRC context are outlined as follows:

1. The direct effect of government policy in the industry.
2. The economic discrepancy between PRC and the country of the foreign firm.
3. The technological gap between local and foreign producers.
4. The cultural difference between the Chinese and the westerners.
CHAPTER III

PHARMACEUTICAL INDUSTRY ANALYSIS

This chapter will thoroughly analyse the pharmaceutical industry environment of PRC based on the five competitive forces of Porter’s model. These forces include intensity of rivalry among existing competitors, threat of new entrants, threat of substitutes, bargaining power of buyers and bargaining of suppliers. The prime objective is to evaluate whether pharmaceutical is a five-star industry in PRC which is structurally attractive to Merck.

Intensity of Rivalry Among Existing Competitors

Rivalry among existing competitors takes the familiar form of jockeying for position -- using tactics like price competition, product introduction, and advertising battles. Rivalry occurs because competitors either feel the pressure or see the opportunity to improve position. In most industries, firms are mutually dependent.

According to Porter, intense rivalry is related to the presence of various factors. These rivalry determinants include:

- Numerous or equally balanced competitors
- Slow industry growth
- High fixed or storage costs
- Lack of differentiation or switching costs
- Capacity augmented in large increments
- Diverse competitors
- High informational complexity
• High strategic corporate stakes

• High exit barriers

In the pharmaceutical industry of PRC, there are local and foreign firms competing in the marketplace. Local firms are usually active in production aspect while less involved in researching new products because of lack of technology. Coupled with the loose local patent law, copying compound developed in western countries through a different manufacturing pathway contributes the majority of business to these local firms.

Foreign firms still reserve basic research of new products in the country of origin. Products can be made available to PRC market via the following arrangements:

• Import finished which are directly imported with full or partial packing and ready for sale without any manufacturing procedure required in PRC.

• License manufacturing which relies on a local partner to complete the formulation procedure by importing bulk materials. That the formulation plant of the local firm should be upgraded to the foreign company's standard is the basis of such business arrangement.

• JV manufacturing which is a business alliance between foreign firm(s) and local firm(s). Each party shares an agreeable portion of the project through negotiation. The production requirement is similar to that of license manufacturing. The main differences are, firstly JV manufacturing allows the foreign company to report the in-market sales revenue in the financial statements and secondly the foreign company can directly influence the sales and marketing activities.

Appendix III shows the profile of major foreign players. Since pharmaceutical R&D is much more advanced in the western countries, it is generally believed that foreign-researched pharmaceuticals are of high quality and efficacy than local ones.
Therefore, provided that the product is originated in advanced countries, it can command premium price. Furthermore, the level of technology used in production in PRC still lags behind the latest Western development (Swanson 1992). Those local brands with same generic components solely made by local plants are much cheaper than the original foreign brands made by JV or license manufacturing because the quality from the latter is expected higher.

Broadly speaking, foreign and local pharmaceutical are competing in different segment. Appendix IV clearly illustrates that three generic strategic approaches for three types of products. Import finished pharmaceuticals are of the highest quality to justify high prices should be in the focus segment; foreign brands locally made by JV where quality can be guaranteed while manufacturing cost is very much reduced should be in the differentiation segment; local brands and generic copies are using overall cost leadership strategy.

**Number of Competitors**

Although there are numerous local pharmaceutical firms competing in the marketplace, it is expected that they cannot impose substantial threat on the foreign competitors unless new business arrangement, like JV or license manufacturing, is aligned because they are competing in different segments as analysed above.

On the other hand, the US$100 million from Janssen constitutes less than 2% of the total medical expenditure on pharmaceuticals in 1991 which marked US$5.6 billion. Concentration or domination has not appeared in the foreign pharmaceutical firm segment.

Since the earliest JV project commenced in 1986, there have been more than ten similar projects laid down with different foreign pharmaceutical firms between 1990 and 1992. A list of these projects are shown in Appendix VIII. Therefore, the
pharmaceutical market order in PRC has not yet established.

The competition in PRC is considered to be fairly healthy in particular in the foreign-researched segment because the in-market prices approved by government are not subject to sudden increase or drop. Most foreign pharmaceutical firms are focusing on product promotion through various means to expand demand.

In conclusion, to Merck as an new entrant, the existing competitive environment where vigorous retaliation by the existing market player is not expected is still favorable.

**Industry Growth**

PRC is the sixth largest pharmaceutical market in the world. Its 1991 sales was US$5.6 billion. The market has been growing at an average rate of 18% p.a. for the past five years. In the first trimester of 1992, it had 26% growth against the same period in 1991 which is largely contributed by the JV foreign companies. It was reported that the combined net profit reported by six JVs exceeded 20% of the entire industry (> US$55 million).

Not only the existing market size of PRC is attractive, but the future market potential is exceedingly high because there is a huge population (800 million uninsured Chinese) who need better health care when the economic environment is progressively improving.

With the expanding characteristics of the pharmaceutical market in PRC, it can provide substantial room for expansion which insures that existing firms can improve result just by keeping up with the industry and where all their financial and managerial resources may be consumed by expanding with the industry.

Pharmaceutical firms in PRC are not required to steal sales from competitors as in those slow growing markets to achieve certain level of profitability. Again,
rapid industry growth is attractive.

Fixed Costs

The investment in the pharmaceutical sector can be regarded as high. Using the recent US investment in JV or licensing manufacturing projects as a guideline, the fixed costs range between US$1 and 35 million depending on the scale (Swanson 1992). Careful analysis on breakeven is essential or the firms will expose to strong pressure to fill capacity which often lead to rapidly escalating price cutting when excess capacity is present.

Because of the high risk of enormous investment, foreign pharmaceutical firms tend to go for JV or licensing arrangement instead of wholly owned subsidiary. Local partners can offer the following benefits:

- Having basic facilities like power, water and simple equipment available, the investment in building the plant can be shared.
- Providing local expertise who have established relationship with relevant government bodies which can expedite the process of project negotiation.
- Assisting foreign pharmaceutical firms in establishing a co-operative image rather than an invasive one because the competitiveness of local firms can be increased by upgrading their production technology.

Differentiation Costs

According to Porter, where the product is perceived as a commodity or near commodity, choice by buyers is largely based on price and pressure for intense price competition results. This applies to the market that generic products are copied by local firms in the pharmaceutical industry in PRC.

Distinctive product differentiation is found between the foreign original brands, either in the form import finished or made by JV/licensee, and the locally made
generics. However, as discussed in the section of "Number of Competitors", they are
not directly competing with each other. Instead they have their own target segment
preferences which creates layers of insulation against competitive warfare.

For foreign original products, due to the strong marketing effort is put behind
by the firms in establishing their brands, doctors tend to be fairly loyal to a particular
product which can in turn be translated into the differentiation cost.

Diversity of Competitors

Generally speaking, competitors diverse in strategies, origins, personalities and
relationships to their parent companies have differing goals and differing strategies for
how to compete and may continually run head on into each other in the process. The
pharmaceutical competitors in PRC are becoming more diverse than ever since foreign
investments started in mid-1980's.

Nevertheless, the approach of these competitors, to a certain extent, can be
anticipated because similar strategies may have been implemented in other markets.
For instance, Japanese pharmaceutical firms usually introduce products at lower
dosage strengths to cope with pricing strategy and utilize sponsorship as the main
focus of the promotion mix. As the activities in the PRC market often lags behind
those in other advanced countries, reactive or even proactive actions can timely be
conducted to minimize the negative impacts if marketing staff is well sensitized.

Strategic Corporate Stakes

PRC is a promising market for pharmaceutical industry in the next several
decades in the Pacific Rim because it has a deservedly high reputation among
developing countries for providing quality health care. It can be demonstrated by the
increased funding allocated for health care infrastructure and development during the
Seventh and Eighth Five-Year Plan (FYP, 1986-95). During the 8th FYP, PRC hopes
to boost production in the medical industry by 8.5 percent annually, domestic sales are scheduled to increase by 7 percent per year (Swanson, 1992). For the entire 1991-2000 period, ¥26 billion has been allocated by central authorities for investment in capital construction and technical upgrading in this sector (Swanson, 1992).

It is not surprising that pharmaceutical firms, in particular those with foreign origin, have high stakes in achieving success. In order to ensure long term success, they might be willing to sacrifice short term profitability. Fortunately, the potential of PRC market is still large enough to accommodate every player to be a winner.

Exit Barriers

Generally speaking, the exit barriers for multinational pharmaceutical firms are quite high. The sources of barriers are identified as follows:

- Manufacturing plants are highly specialized which often have low liquidation value.
- High fixed costs of exits including labour agreement are involved.
- Alliances are established with government run operations which involves discouragement of exit out of concerns for job loss.

Threat of Entry

Currently, Merck has not established any direct presence in PRC. The business is undertaken by exporting through a licensee which means that the products are made available as import finished. However, such an arrangement makes Merck’s products extremely uncompetitive because the in-market prices are far beyond the affordability level in PRC.

The current in-market prices of Merck’s products are almost three times the ex-manufacturer prices because of the following factors:

- Moderate profit margin offered to licensee
Import duty set at 39% upon entry to PRC

High cost of foreign exchange due to the grey market exchange difference

High distribution margin charged by the three-tiered distribution system

Therefore, Merck’s current sales are exceptionally small when compared to other multinational pharmaceutical firms which have JV or licensing manufacturing established. In order to allow Merck to achieve a meaningful market share in the pharmaceutical market of PRC, Merck’s products must be affordable by local Chinese. An entirely different operations has to be established to maximize Merck’s strengths to facilitate its penetration in the PRC market.

As discussed in the previous section of "Industry Growth", JV or license manufacturing is more preferred to wholly owned subsidiary. Furthermore, comparing JV and license manufacturing, the former should be more favorable because Merck can influence on the quality of sales and marketing and ensure the approach to be in line with the corporate policies.

Although several products have already been on the market for some time, Merck is regarded as a new entrant to the PRC pharmaceutical market with respect to company as an entity.

New entrants to an industry is generally believed to be negative by existing market players. It is because the prime desire of the new entrants is to gain market share by bringing new capacities. As a result, prices are usually driven down and costs are jerked up which lead to reduction of profitability.

According to Porter, the threat of entry into an industry depends on the barriers to entry that are present, coupled with the reaction from existing competitors that the entrant can expect. If barriers are high and/or the newcomer can expect sharp retaliation from entrenched competitors, the threat of entry is low.

The threat of entry of pharmaceutical industry in PRC is evaluated based upon
the major sources of barriers to entry defined by Porter.

Government Policy

Patent Law

The characteristics of pharmaceutical industry is highly relied on extensive R&D which usually costs more than US$100 million for a particular product. Those new molecules eligible for marketing for human use are normally patented. For advanced countries like the United States and Hong Kong where patent protection for drug molecule and manufacturing process is well respected, secure return on investment is more promising. The degree of security is very much dependent on the extent of patent law enforcement.

PRC belongs to another extreme of the patent protection continuum where only drug molecule is patented. If the same drug is manufactured through a different pathway, protection will not be valid. Branded pharmaceutical business is more risky in PRC.

Although the patent regulation has been updated early this year with the introduction of the manufacturing process patent protection to the drugs that were first patented worldwide after January 1, 1986 and have not been marketed in PRC before January 1, 1993, the enforcement is very much doubted, in particular when corruption issue is involved. Nonetheless, it is regarded as a continuing improvement of intellectual property protection which will be a good opportunity for research-based pharmaceutical companies like Merck.

Protectionism

Although doctors in PRC generally prefer using import finished branded pharmaceuticals because of higher quality, the government has established barriers to
discourage import of finished products. This stems from both protectionism of the industry and control of health care cost. In 1991, US$11 billion was spent on medical expenditure which represented 3.9% GNP. US$4.2 billion of this amount was allocated to national health care scheme for the staff and workers working in government owned organizations and has increased six-fold in the past 11 years. Therefore, the government is concerned that only 17% of population has used up 38% of its medical expenditure.

To keep a more balanced health care cost, the Expert Committee who is responsible for imported finished product registration exercises protectionism to various extent. It can refuse registration of a product if there are similar products available in China. In selected cities, patients are only reimbursed 50% for imported finished products but 90% for locally manufactured products. Due to the reduction of government subsidy, imported finished products impose a very significant financial burden on patients.

Even when import finished products are not openly discouraged, the foreign manufacturer will be requested to undertake local production when the value of an imported item becomes significant, say more than US$10 million.

Import Restriction

The PRC government control over import licenses also significantly limits pharmaceutical imports. Currently, almost all pharmaceutical products must be imported through the Medicine and Health Product Import/Export Corporation (MEHECO), which fall under the auspices of State Pharmaceutical Administration (SPA). MEHECO's approval is based on whether local alternatives are available in sufficient quantities to meet demand, and whether the imported drug is to be used to treat a priority disease in PRC. The criteria, in addition to quality and reliability
standards that also must be met, apply to both import finished and bulk preparations which have been formulated ready for tableting locally. Approved imports are assessed a 30-percent duty upon entry to the country.

Imports of raw materials to be used in local pharmaceutical production generally fall under the jurisdiction of the Ministry of Chemical Industry, and therefore are subject to other import requirements.

On a whole, the import policy is costly, complicated and time consuming which forms another barrier to new entrants who have not established working relation with the related government units.

Local Manufacturing Policy

Before the reforms of patent law which does not cover the manufacturing pathway, the PRC manufacturing policy grants great favoritism to local manufacturers. Every product can be produced locally as a generic by any manufacturer which is registered as the first manufacturer if the manufacturing process is different from that of the original drug researcher. It can even be marketed with the same tradename as the branded one.

If the original drug researcher who is usually a foreign pharmaceutical company, needs to produce the drug in PRC as the second manufacturer, approval has to be obtained from the first manufacturer. Generally speaking, approval is less likely to be granted unless the product quality is significantly better than that of the existing one.

However this policy did not apply to a situation that the first manufacturer is a foreign company while the subsequent manufacturer is a local company. As long as the generic product can demonstrate its bioequivalence to the branded one, manufacturing right can be granted.
This protection for local manufacturer sets a great barrier for the foreign pharmaceutical company which has no local manufacturing plants.

**Health Care System**

The sources of health care financing in PRC are extremely varied and complex. They include both direct and indirect government spending, different types of insurance plans and expenditure by industry, collectives, private practitioners, and patients.

Up until about a decade ago, provision of health care in China was offered primarily through communes, which provided free and preventive care to their members. With the disbanding of the commune system, health care is now paid for through several methods:

- Government monies
- Insurance
- Patient fees

Of the 1.1 billion population, only 300 million (26%) living and working in the urban cities are covered by national health insurance reimbursement scheme. The rest, 800 million, who virtually are all farmers living in the rural or remote territories are not eligible for any health care benefit. Their access to health services depends on their ability to pay.

Currently, the government is planning to expand the health care benefit to a nationwide level which implies that 1.1 billion people will be recruited in the reimbursement scheme. The ultimate effect can either be positive or negative to the pharmaceutical industry. There is no doubt that if greater coverage is explored, the market size is significantly increased in terms of patient number. However, if the medical expenditure is not proportionately increased, the potential in dollar value will
remain unchanged. It will end up with stringent cost containment measures like those exercised in the European countries.

In the past, the reimbursement scheme covers total cost of diagnosis and treatment regardless of the value. Recently, the first step of cost containment measures, copayment method, has been implemented which requires the patient is to pay a certain portion of the therapy. This will be a significant drawback for those high priced imported products from new entrants which have not established any manufacturing facilities in PRC.

Registration Procedure

Unlike consumer products, pharmaceutical products have to obtain registration before they can be marketed. One of the basic criteria to request registration review is to complete a registration trial which lasts between several months and over a year depending on the drug category. The substantial lead time not only imposes capital cost of entry but also gives established firms ample notice of impending entry and allows them to formulate retaliatory strategies.

Although the size and growth of the PRC pharmaceutical market is enormous, the registration requirement is fairly a barrier to new entrants, in particular when they do not know who to contact to expedite the overall registration procedure legally.

Economies of Scale

Economies of scale can be found in various functional areas of pharmaceutical industry. The most obvious is manufacturing which is followed by sales and marketing as well as distribution.

With respect to production, the drug manufacturing plant facilities, for instance sterile environment for those injectable products and anhydrous chamber for those water soluble products, should be very sophisticated to ensure the product quality.
Therefore, the initial setup cost is very great. The production plant is only justifiable when the market demand is substantial which allows the unit cost to maintain at reasonable level. Otherwise, the production will be at a great cost disadvantage and lose its competitiveness. In the case of pharmaceutical industry in PRC, this factor may even be more critical because the source of supply and the unique packaging with Chinese text have to be registered. The products cannot be imported if the stock is inadequate or exported if the stock is excessive.

For sales and marketing, scale economies are found when several products are being promoted because costs can be shared. There is usually a basic capacity of sales and marketing required to manage one product which can be extended to some other products without any further increment in capacity. The sales force promotes different products instead of one to the same target audience during one visit which can have a better utilization of resources.

**Product Differentiation**

As analysed in the previous section on "Differentiation Costs", there is a strong brand identification for foreign researched product segment in PRC. Brand loyalties can be established over time because doctors’ confidence in a particular brand is strengthened by accumulation of experience. Once it becomes a habit, change is not easy within a short period of time.

This favorable condition, to a certain extent, may be complicated by the availability of generics substitutes which are legal under the past patent law. The doctors have to consider the affordability level of patients before deciding to use the branded product or its generic variants.

Given that the new patent law is enforced which creates a more protective environment for foreign researched products in PRC, brand identification can be
further developed. Therefore, for a new entrant, high investment in building a brand name, though risky, is required to gain customers' acceptance. Therefore, innovative products which are in line with advanced therapeutic trend are much preferred as they can challenge the conventional approach in the management of diseases. The successful rate of building brand loyalty is higher.

**Capital Requirements**

Although production facilities accounting for the majority of capital investment which has been explained in the previous section on "Economies of Scale", it is referred to a condition that the product has already been marketed. One of the profound characteristics of pharmaceutical industry is that up-front capital requirement for R&D to develop a new product which is over US$ 100 million is significantly high and risky.

Extensive investment for R&D is still in need at different stages of the product life until it becomes declining. The study results will sometimes lead to an expansion of the product usage, for instance new claims and special types of patient. In the case of PRC, this type of R&D investment is one of the major barriers to entry.

Besides significant financial burden created, R&D requires a very long time to develop a new product for human use which is usually more than ten years as well as to demonstrate certain long term beneficial effect of the product after launch. Time is also a valuable resource which builds another great barrier to new entrants.

**Switching Costs**

Switching costs can be classified into two categories. One is to switch to a product of the same therapeutic class or to an established class and the other one is to switch to a product of a new class which is usually referred to those innovative products. In general, the switching cost for the former one is not too high because
doctors only need to learn the minor differences of the therapeutic effect, dosage and administration frequency of the product in the interest.

However, this will be entirely different if a breakthrough product is introduced. It require a series of education program to arouse doctors’ interest in gradually increasing their acceptance to the new concept of treatment which subsequently translates into action. Obviously, extensive cost is involved to enhance market acceptance to the innovative products which explains the high switching costs.

There is virtually no difference between PRC and worldwide markets with respect to this particular characteristics. Therefore the barrier to entry created by switching costs is fairly significant in PRC.

Access to Distribution Channel

In PRC, distribution of pharmaceutical products is controlled through a three-tiered system managed by the China National Corporation of Medicine (CNCM). At the top of the ladder are national Level I stations in Beijing, Shanghai, Shenyang, Guangzhou, and Tianjin, which allocate products to Level 2 distributors at the provincial level, who in turn sell to Level 3 stations within the county or municipality. At each level, a State-determined price mark-up is allowed (Swanson, 1992).

Although there would be a few independent distribution networks emerging to become involved in this sector, it is likely that CNCM will maintain tight control over drug distribution in order to minimize the risks of drug abuse and improper distribution. Most local firms prefer to rely on this traditional distribution system in order to avoid transport and bureaucratic obstacles. Multinational pharmaceutical companies which sell imported finished products or operates through license manufacturing also tend to use the distribution network, as setting up one’s own network requires a considerable cost in terms of staffing and assets.
Under this system, those products with high profit and consistent high sales volumes attract distributors’ greatest attention. On the contrary, those new entrants where sales revenue is still uncertain are very difficult to get distributors’ support. It will subsequently affect the consumption at customers’ level. Firm may have to sacrifice a certain portion of profit margin initially to ensure a better distribution which directly affects the rate market penetration in PRC.

In view of the distribution problem, multinational pharmaceutical companies which have set up JV operations usually attempt to market their products independently in key cities while relying on the above tiered system to reach rural areas.

Therefore, access to distribution channel imposes relatively great barrier to entry in PRC where the territory is so ample that distribution is vitally important to the overall success of business strategy.

**Expected Retaliation**

Among the current giant population in PRC, there are already 100 million people aged 60 and up. Considering a rapidly aging population in the coming two decades, it can simply be interpreted that the demand for health care products will steadily increase. Coupled with increasing urbanization, it will result in a greater need for convenient and high quality western medicine than for traditional Chinese herbal medicine.

Due to the strong economic growth and the expanding aging population which causes rapid industry growth, there is great ability for the industry to absorb new firms without depressing sales and financial performance of established firms. Therefore the expected retaliation in PRC will not be so massive as that in the western developed countries.
Pressure from Substitute Products

By placing a ceiling on prices it can charge, substitute products limit the potential of an industry. Unless it can upgrade the quality of the product or differentiate it via marketing or other means, the industry will suffer in earnings and possibly in growth.

Herbal medicines and acupuncture regarded as the essence of ancient Chinese culture and tradition can be considered to be the substitute products in pharmaceutical industry of western medicines. Although there are not much scientific proof on their mechanism of action, Chinese people are fairly receptive because of personal experience and out-of-the-mouth promotion from relatives and friends.

Nevertheless, the pressure from substitute products in the PRC pharmaceutical industry is not exceedingly great because the trend of urbanization is progressing which favors scientifically proven medication rather than accumulation of experience. An obvious example is anti-infective products which include antibiotics and vaccines.

To cure serious infection, rapid onset of readily available potent medicines is critically important to ensure fast and complete eradication of the bacteria in the body. Western antibiotics can serve this purpose through intravenous injection whereas Chinese herbal medicine or acupuncture cannot achieve such a therapeutic goal. Regarding vaccines which is a type of preventive medicines help the body to build up resistance to viral infection, they are in great demand for developing countries like PRC. There is no such a category in Chinese herbal medicine.

Another example that can be quoted is drugs for chronic diseases like cardiovascular disorder. This kind of medicine is a life-long treatment. Western medicines have the advantage of being convenient because the patients do not need to prepare the medicine by themselves. This trend will become more prominent when urbanization continues.
Apart from the fundamental differences in the product attributes between Western and Chinese herbal medicines, the training provided by medical institutions is dominated by western medicine which is perceived to be more systematic and advanced. The development of western medicine is also much faster because of its strong commitment in R&D.

Therefore, the threat of substitute products in the PRC pharmaceutical industry can be overcome by putting stronger emphasis on quality R&D and marketing.

**Bargaining Power of Buyers**

Generally speaking, buyers compete with the industry by forcing down prices, bargaining for higher quality products or more services, and playing competitors against each other -- all at the expense of industry profitability.

The power of each of the industry’s important buyer group depends on a number of characteristics of its market situation and on the relative importance of its purchases from the industry compared with its overall business.

Unlike in consumer industry, the ultimate end user who is the patient is not the decision maker to select which particular brand in the pharmaceutical industry. It is decided by medical professions including doctors and pharmacists as well as distributors and medical policy makers. In the PRC health care system, these people are playing different and important roles in the decision making process - which drug should be used.

As discussed in the previous session about "Government Policy", it explains how the medical policy makers can block the availability of a drug at different levels like registration and import. Although they are not involved in any of the purchasing function, they have great influence on whether the constitutional buyers can get access to the products they want in PRC.
Even a drug can smoothly pass policy makers' stringent control in PRC, it has to go through two buyer levels before making itself available in hospitals. These are distributors and pharmacists who are responsible for keeping budget. According to the tiered distribution systems, distributors are the first line contact with manufacturers. They are responsible for placing orders to manufacturers and subsequently delivering goods based on orders received from individual hospitals. Pharmacists are responsible for deciding which drugs should be made available in the hospitals based on the budget allocated.

As both distributors and pharmacists are accountable for financial balance of the assigned budget where they have to bear a risk of keeping excessive inventory if the demand is lower than expected, they own a certain degree of bargaining power on pharmaceutical manufacturer. In the case of distributors, they are reluctant to purchase high priced new products unless there is attractive margin or other benefits offered. For pharmacists, during the initial phase of open door policy when marketing was not well developed, it was not uncommon that they could force doctors to use a particular product which marked high inventory in hospitals. It was because their knowledge might not be too primitive to differentiate the attributes of different products. They would make the decision based on the price but not considering value for money.

When a pharmaceutical product is made available in a hospital, it can only be prescribed if doctors are capable of defining the disease through various diagnostic tools and determining treatment is required.

At doctor's level, the bargaining power is usually not too violent because of the following two main reasons:

- Doctors basically are not responsible for the control of drug expenditure. Therefore they are less concerned about the price.
The performance of the product is very important to the quality of the treatment to patients. Price is of lower priority from doctors' perspective.

Despite the presence of bargaining power at higher level of the purchasing system in PRC, it can still be manageable. It is believed that if open door policy keeps going, marketing effort can deliver more valuable relevant information to the individual parties involved in the pharmaceutical buying process to enable to make better decision with respect to product quality and value for money.

Bargaining Power of Suppliers

Suppliers can exert bargaining power over participants in an industry by threatening to raise prices or reduce the quality of purchased goods. Powerful suppliers can thereby squeeze profitability out of an industry unable to recover cost increase in its own prices.

The supplier side is generally not a big issue in pharmaceutical industry worldwide as well as in PRC because the critical ingredient is manufactured internally through a secret process which is under the control of the company. The other components of the medicine are simple chemical compounds which are inexpensive, easily accessible and sold as commodity by chemical firms. The packaging component is made of traditional materials like paper, aluminium foil and plastic which can be sourced very easily without facing great pressure from the respective manufacturers. Instead, pharmaceutical firms have powerful bargain for those items.

As a result, provided that the labour force of the manufacturing plant is well organized internally to get them functioning productively, the supplier pressure of pharmaceutical industry in PRC is not excessively powerful.

Summary
To conclude, based on Porter’s model, pharmaceutical industry in PRC is structurally attractive because:

- Giant industry competitor has not appeared.
- Threat of new entrant is fairly low.
- Threat of substitute products is not great.
- Bargaining power of buyers, though strong, is manageable.
- Bargaining power of supplier is very small.

These five key competitive forces are diagrammed in Appendix V which shows that the PRC pharmaceutical industry can be regarded as a four and half star industry.
CHAPTER IV

COMPETITIVE STRATEGY

Following the industry analysis in the previous chapter, it is concluded that PRC pharmaceutical industry is highly profitable because, to a very great extent, the five determinants favor profitability.

However, Merck officially started the business in PRC by exporting through a licensee in 1989 which has already lagged behind those pioneered companies, like Janssen, Squibb and Smith-Kline-Beecham for almost half a decade. The licensing partner was a technoventure company with no expertise knowledge in PRC pharmaceutical business. Since the licensing agreement would only last for five years, it appeared that the licensee was not willing to make long term commitment. For instance, it has not tried to build up a well-organised structure which caused staff responsibility overlapping and decision making process ineffective.

In addition, pharmaceutical promotion belongs to high-manpower involved type. The knowledge of sales force is vitally important to ensure product information is correctly conveyed in a balanced perspective manner as well as in line with product strategy. However, the licensee has not paid much attention to developing sales force’s communication skill in product promotion.

Furthermore, as explained in the section of "Threat of Entry" in Chapter III, the in-market prices of some Merck’s products are virtually uncompetitive in PRC. One might imagine how extreme the situation is that the daily costs of certain products are more expensive than those in the U.S.. For those life-saving products
and the course of therapy is limited five to seven day, like injectable antibiotics, there is still market in that particular segment. However, for those life-long treatment, like cholesterol reducing drug, the opportunity of getting share is very slim.

The above are the main reasons why Merck has not made any great achievement, especially with respect to sales revenue, in PRC so far. Judging from this situation, it is almost impossible for Merck to capitalize on the attractiveness of the PRC pharmaceutical industry with the current business arrangement.

Therefore, in this chapter, it will discuss how Merck can become a successful player in PRC. To accomplish the goal, a competitive strategy should be developed to enable Merck to cope successfully with the five competitive forces and thereby yield a superior return on investment.

Those key challenges faced by Merck are summarised as follows:

- Compared to the existing JV pharmaceutical operations in PRC, Merck is a new entrant in PRC. How Merck catches up and outcompetes them within the shortest period of time?
- A full range of Merck’s product line consists of more than 50 products globally. How Merck manages the product portfolio to ensure fast penetration while minimizing generic replacement in PRC?

**Entry Strategy**

The possible alternatives of entry strategy are including:

- Wholly Owned Subsidiary
- Joint Venture Organization
- Licensing
- Exporting

**Wholly Owned Subsidiary**
If 100 percent ownership is pursued, Merck has a significant advantage of avoiding any potential problems of communication and conflict of interest that may arise with the involvement of a partner. Full line of operations including local manufacturing and marketing is implemented. However, the time and energy required to attain such organization seems to be unrealistic that we can catch up the leading competitors in the next ten years. Although full ownership is highly favorable in terms of control, there is a great drawback in competition if time factor is considered.

**Joint Venture Organization**

This form of organization which involves the partnership with a local pharmaceutical firm are most welcome by multinational pharmaceutical companies as shown in Appendices III and VI. The advantages of this strategy are the sharing of risk and the ability to combine strength in a joint venture.

Since Merck lacks of in-depth knowledge of the PRC pharmaceutical market but has considerable R&D and human resources backup, the local pharmaceutical firm should possess the following strengths so as to achieve maximum synergy:

- Have established relation with policy-makers to minimize the negative impact on Merck's products.
- Have fairly large scale manufacturing plant to enable local production right from the start.
- Have extensive sales force coverage to implement direct product promotion to doctors and pharmacists.
- Have good rapport with distributors and pharmacists to ensure adequate supply of Merck's products to hospitals.
- Have the same mission shared with Merck -- to provide effective medicines for the most serious and costly diseases in PRC.
The main disadvantage of joint venturing is the very significant costs of control and co-ordination associated with working with the local pharmaceutical partner.

**Licensing**

Licensing is also an alternative with considerable appeal. Through licensing agreement with a local pharmaceutical firm, Merck's products can be produced locally and marketed with minimal investment and expenses by importing bulk or manufactured formula materials. The profile of the local partner should be similar to that described in the previous section on "Joint Venture Organization". The only difference from the current arrangement is that local manufacturing will be pursued to address the pricing issue.

The principal disadvantage of this licensing approach in PRC is that Merck will lose control over the quality of marketing which is a key determinant of the success of a new product. The potential returns will then be affected.

**Exporting**

Similar to the current situation, products are manufactured abroad and sold as import finished in PRC. The advantages of exporting are that it allows Merck's manufacturing operations to be concentrated in a few locations to make co-ordination and quality control easier. This is especially true if the demand in each market is still very small in which decentralized manufacturing is not justified, or production line is unique and cannot share with other products.

Although investment in manufacturing operation is not required, marketing effort is directed by a JV operations to gain the maximum advantages from PRC pharmaceutical firm's market expertise and Merck's investment in R&D and marketing know-how.

The unaffordable pricing issue left unresolved is the obvious shortcoming of
this form of business arrangement. From the economic point of view, Merck may entirely lose its competitiveness to other players.

**Portfolio Strategy**

In the PRC context, Merck’s products can be classified in the following categories:

- Fully patented in PRC
- Unpatented in PRC but patented in advanced countries
- Unpatented on a global basis

**Fully Patented in PRC**

There are two types of protection granted depending on the status of worldwide patent, and that of local registration and marketing situations. For those products which are patented in foreign countries after January 1st 1993, there will be 20 years protection. For products which were patented between January 1st 1986 and December 1st 1993, and have not been registered or marketed in PRC, there will be seven and a half years pipeline protection.

These products are the newest entities along the product line and have better therapeutic performance than existing products. Therefore, to capitalize on the competitive advantage for patent protection, Merck should pursue differentiation strategy to command premium prices to attain high returns.

Compared to Janssen which is the current leading multinational pharmaceutical company, Merck has an exceptionally stronger research pipeline with a number of products in late-phase clinical studies. This is a sustained advantage for Merck to successfully compete with Janssen in the long term run, say five to ten years.

In addition to a correct strategic advantage, right strategic target is also crucial to the success of Merck’s PRC patented products. Although the PRC economy is
expanding very fast, there is a great discrepancy in affordability between urbanized cities and rural districts. The urbanized cities are less vulnerable to the restriction of reimbursement policy because patients are more able to pay even the drug costs are not fully reimbursable. Moreover, educational level of both doctors and public is generally higher, and information flow is more efficient in the urbanized cities. Therefore, a focus approach for Merck’s PRC patented products is more justifiable at least for the first five years with intense marketing effort to establish the brand. Gradual shift to a broader target base can be considered when approaching to the era of 2000.

Unpatented in PRC but Patented in Advanced Countries

This group of products are usually either the star or problem children in the worldwide markets according to Boston Consulting Group analysis. They have significant competitive product advantages over the old product which no longer or almost do not have patent protection.

In order to maximize the potential of this group of products, broad differentiation strategy should be adopted. On one hand aggressive marketing effort is utilized to establish the brand image, on the other hand affordable price is adopted to allow broad target coverage. Although these products are subject to substantial risk of generic erosion, local manufacturing partnership arrangement will impose certain barrier to generic entry because guaranteed product quality can defend the slightly premium price.

The strategy will become more complex if Merck has more than one brand with minor product differences treating the same kind of disease. In order to fully maximize the potential of individual brands, dual strategy should be pursued. The same broad differentiation strategy can be applied to certain brands with Merck’s
participation in local manufacturing and marketing. Broad cost strategy will simultaneously be designed for some other brands via licensing. Of the two strategies, the price of the latter one is expected to be lower because it is generally believed that marketing programs initiated by local pharmaceutical firms are less sophisticated in creating an outstanding intangible brand image.

Although Merck has no direct control over marketing operations for the latter strategy to add value to the products, it is an advantage from the resources management point of view because limited resources is a realistic concern in the world.

This series of products will create head-on competition with the top ten multinational pharmaceutical companies in PRC, like Squibb, Smith-Kline-Beecham, and Glaxo etc, especially when similar product class is present in competitors’ product line. Merck should also successfully compete in this category by its consistent and creative marketing effort, and by licensing to good partners to maximize the total returns.

**Unpatented on a Worldwide Basis**

This product category are basically the older brands which were researched decades ago. Due to their long term availability worldwide, all the efficacy and side effects have already been established and are well known to doctors because they might have learnt the drug from basic medical textbooks. They might also play an important role in contributing to Merck’s success with respect to generating profit in the PRC market.

Since almost all doctors are familiar with these drugs, heavy marketing programs are not needed. If reasonably low prices which still allow Merck to make profit are offered, the profit is still very attractive when ample sales volume is
achieved.

As these products are not protected by patent and may have had many copies in the market. In order to compete with the generic market, cost leadership strategy should be implemented. Skimming price strategy can be offered with an highlight on quality guaranteed by the original researchers as the promotion platform.

Besides, the group of products also require broad coverage because both urbanized cities and rural territories are their targets which can enhance the benefits of economies of scale resulted from large sales volume. Broadly speaking, a broad cost strategy is appropriate for products without worldwide patent. Therefore, Merck is fuelled by further competitive advantages through licensing when compared to local and medium sized multinational pharmaceutical firms.

Targeting Strategy

Substantial economic gaps not only appear between PRC and the U.S. but among different cities or provinces within PRC, this makes nationwide promotional approach as practised in the U.S. pharmaceutical market almost impossible. In order to justify the investment in the PRC pharmaceutical market, Merck should develop a precise targeting strategy based on careful market segmentation.

The level of spending power of pharmaceuticals can be a relevant index to be based on to exercise segmentation. Such level is closely related to the degree of economic activity and health care subsidy. These are representing the total affordability of two parties, with the former from patients’ pocket and the latter from the government or insurance. The combination of the two sources presents a continuum of the following four market segments which are also diagrammatically illustrated in Appendix VII:

- High economic activity and good health care subsidy
High economic activity and poor health care subsidy

Low economic activity and good health care subsidy

Low economic activity and poor health care subsidy

High Economic Activity & Good Health Care Subsidy

This segment can be referred to people working for enterprises in those coastal cities and Special Economic Zones which include Guangzhou, Shanghai, Beijing and Tianjin. These areas are being more urbanised with high GDP per capita. Costs of medical care are at least partially covered by insurance scheme. Due to high affordability, there is great potential for premium priced pharmaceuticals of superior quality. It is the key target for new advanced medicines where differentiation strategy is applicable.

High Economic Activity & Poor Health Care Subsidy

This segment only arouse after the implementation of open door policy, especially, in recent years people are encouraged to start up small business on their own by granting attractive tax exemption. Geographically, it also focuses on coastal cities and Special Economic Zones.

Since these people are no longer working in the government or enterprises, they are not eligible for any of the current national health insurance schemes. Nevertheless, being self-employed, they can earn a lot more than before. The affordability level is still very high. Therefore new advanced medication is also applicable to this segment.

Low Economic Activity & Good Health Care Subsidy

This segment signifies the characteristics of those secondary developing cities, like Taiyuan, Wuhan and Changchun etc, which are a bit away from the primary ones.
The economic activity is obviously less flourishing. However, heavy industries there still provide substantial job opportunities for local people. In other words, the people belong to the insured group with various extent of medical coverage.

Compared to the previous two segments, the potential for Merck’s breakthrough advanced pharmaceuticals might be lower because both employers and people are less affordable to pay the premium. The potential tends to stretch to the low-priced end.

**Low Economic Activity & Poor Health Care Subsidy**

This segment is basically referred to uninsured people living in rural areas. Most of them are farmers. Their situation is the worst among the four segments. There is neither no way for people to generate money through economic activities nor no medical insurance coverage provided by employers. With such poor affordability, potential for Merck’s products may be found in the very low-priced and unpatented ones.

The above situation is expected to improve if the insurance is extended to a nationwide coverage in the coming years. By that time, this segment will gradually merge into the Low Economic Activity and Good Health Care Subsidy group.

**Alliance Strategy**

As identified in the case study in Chapter II, narrowing the technological gap between Merck and local partners is another challenge. It is discussed in the section of "Entry Strategy" that there will be two main types of local partners, namely, JV and licensing with whom Merck has to cooperate. An alliance strategy with respect to production in pharmaceutical industry is composed of various major steps in the process of establishing long term partnership along with the growth of Merck’s business. Those steps for oral formulation include:
Tableting

Partner starts with toll manufacturing which is the simplest form of production. It only involves tableting of formulated powder imported from Merck’s plant in the U.S. or overseas. No special expertise knowledge is required.

Blending

Partner is upgraded to handle the blending of the active ingredient supplied as bulk from Merck’s plant in advanced countries and inactive components sourced or produced locally. Some expertise knowledge is involved in the blending procedure which is then followed by tableting again.

Synthesizing

Partner gets involved in synthesizing the secrete formula of the active ingredient. It is the most complicated procedure which may include fermentation and chemical synthesis. Blending and tableting are the subsequent steps to complete the full manufacturing process. Needless to say, extra high expertise knowledge is compulsory to ensure high quality and zero defect. Therefore, large scale technology transfer is essential.

If the product is presented in injectable formulation, for example injectable antibiotics and vaccines, sterilization during bottling is an important manufacturing procedure. Again, high technology is required.

The progress of upgrading local partners’ production expertise along the above stages is dependent on various key factors which are:
Reliability of partner
Overall corporate profitability of Merck
Readiness of partner
Requirement of government policy

Among the above four, there is a fundamental difference in the partnership alignment between JV and licensing that causes the factor of reliability to be almost unnegotiable in the latter case. As Merck does not have any direct control over the licensee, the trust in the highly confidential matter is still very much in doubt. Therefore, if the partnership is made through licensing, the synthesizing step of production may never be reached.

Apart from addressing the issue of technology gap, alliance strategy can also effectively deal with difficult situations caused by cultural differences. For instance, seniority counts on age in the Chinese culture which means that the older the person, the greater the power, the more the honour. However, it is entirely a cultural shock to American. Therefore, local partner, in particular, in the case of JV, can serve as a bridge between the customers in PRC and Merck’s management to expedite their market understanding and in turn to increase the efficiency of the whole business operation.
CHAPTER V

CONCLUSION

In order to expedite Merck's penetration in the PRC pharmaceutical market, the strategy should be multi-faceted to allow concurrent business development provided adequate resources are available. Appendix VIII and IX outline the matrix of entry strategy and portfolio strategy, and targeting strategy and portfolio strategy in the management of Merck's products in PRC.

It is not impossible that Merck's full product line can be introduced to the PRC market by adopting different competitive strategies. Firstly, focus differentiation strategy is appropriate for PRC patented products with marketing function directed by JV operations, and products being produced either locally or abroad. Secondly, broad differentiation strategy is suitable for PRC unpatented but worldwide patented products. The JV operations is fully responsible for manufacturing and marketing. Thirdly, if there are more than one PRC unpatented but worldwide patented products available, broad cost strategy is an alternative option to fully maximize the product potential with minimal investment through licensing. On the whole, the profit is also fairly attractive. Finally, it comes the broad cost strategy for those worldwide unpatented products. Again, through licensing, superior profit can be attained if their volume is huge enough.

Although it would be the best if all the above could start at one time, resources, in terms of time, finance and manpower, are limited in an actual environment. Therefore, the highest priority should be made to PRC patented products
which guarantee return on investment the most. The second priority should then be placed on the PRC unpatented but worldwide patented products because of their promotional responsive nature. Superior return can be created by outstanding marketing programs.

In addition to financial return, Merck's research oriented corporate image can be established through the promotion of these two groups of product. This can be regarded as a process of building up the confidence of doctors and pharmacists in Merck's advanced treatment technology which can subsequently help reduce the barrier of acceptance if new products are introduced in the future.

Besides, product group focus is also different in different market segments defined in the section of "Targeting Strategy" in Chapter IV in order to maximize the potential for the product group as well as the market. Since high economic activity can lead to wealth for the majority of the people, the spending power is less dependent on the degree of health care subsidy. Therefore, for the two segments with the common characteristic of high economic activity, they belong to the highly affordable group, PRC patented products and PRC unpatented products supported by differentiation strategy are the key focus for Merck.

However, if economic activity is low, the level of health care subsidy will become significant. For the worst case where subsidy is poor, the affordability is greatly bounded by the low income of rural farmers. Thus, the product group is only confined to worldwide unpatented products offered with very low prices. If health care subsidy is supported by employers as in those secondary developing cities, the product focus may stretch to PRC unpatented category with cost leadership strategy.

As of today, the extensive investment made by all major multinational pharmaceutical companies are undertaken through JV arrangement. One of the important steps in forming JV is to identify an appropriate partner. The criteria of
selection has been discussed in the section of "JV organization" in Chapter III. In the process of screening, only those leading capable ones will be selected. With the combined strengths of foreign and local firms, those newly formed JV companies will favorably compete in the market and further expand. However, those sub-standard local ones will continue to lose their competitiveness and disappear ultimately. Therefore, in the long term run, say twenty years from now, the PRC pharmaceutical market may be dominated by successful JV companies.

As the market environment is changing invariably, the set of strategy established at this stage should be evaluated and fine-tuned on a regular basis to ensure that strategy formulation and implementation are evolved with the market dynamism. This is the essence of crafting strategy (Mintzberg 1992) which emphasizes the ongoing nature of the process rather than a one-time off exercise. During the course of planning period, it is speculated that the following possible changes might take place in the marketplace in the next decade:

1. Rivalry among market players will become progressively intense as a result of substantial investment by multinational pharmaceutical companies in recent years.

2. Double digit growth in the PRC pharmaceutical market can be maintained which implies that the market will expand at least by three-fold by the year of 2003. This optimistic view is derived from the rapid economic growth and the implementation of nationwide insurance schemes. The affordability of the four market segments defined in the section of "Targeting Strategy" will be upgraded to accept better health care products more readily.

3. It may lead to a negative impact if insurance benefit is expanded to nationwide level because cost-containment issue may become more stringent. Price pressure from buyers, in particular government and insurers will increase.

4. The investment may become more justifiable as intellectual property will be more
secure after reforms of patent and trademark law. On one hand it can cause the industry more attractive, on the other hand competition will become more fierce as companies tend to increase investment to attain a better position in the market.

Since changes can either be positive or negative, in order for Merck to be a major player in the PRC pharmaceutical market, it should play an active role in shaping the industry to more favorable for returns on investment. Although Merck is relatively late compared to its major worldwide competitors with respect to entry to PRC, with its strong commitment and highly co-ordinated implementation of the multi-faceted strategy, the objective of Merck to be successfully compete in the marketplace can still be achievable. Subsequent to the formulation of the broad competitive strategy, there is a series of ongoing challenges that has to be resolved. Some of them are listed as follow for careful consideration:

- What is the most optimal infrastructure of the JV organization?
- How to set up a regulatory body to ensure all market players are implementing ethical promotion?
- How to improve the distribution channel to expand the number of outlets?
- How to improve the management skill of different types of employee to increase productivity?

All in all, strategic planning of Merck in the PRC pharmaceutical industry is a long term survival strategy for the overall corporate.
APPENDIX I

COMPARISON OF HIGH- AND LOW- CONTEXT CULTURES

<table>
<thead>
<tr>
<th>Factors/Dimensions</th>
<th>High Context</th>
<th>Low Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lawyers</td>
<td>Less important</td>
<td>Very important</td>
</tr>
<tr>
<td>A person’s word</td>
<td>Is one’s bond</td>
<td>Is not to be relied upon, &quot;get it in writing&quot;</td>
</tr>
<tr>
<td>Responsibility for</td>
<td>Taken by highest level</td>
<td>Pushed to lowest level</td>
</tr>
<tr>
<td>organizational error</td>
<td>People breathe on each other</td>
<td>People carry a bubble</td>
</tr>
<tr>
<td></td>
<td></td>
<td>of private space with them and resent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>intrusions</td>
</tr>
<tr>
<td>Time</td>
<td>Polychronic - everything in</td>
<td>Monochronic - time is money</td>
</tr>
<tr>
<td></td>
<td>life must be dealt with in</td>
<td>Linear - one thing at a time</td>
</tr>
<tr>
<td></td>
<td>terms of its own time</td>
<td></td>
</tr>
<tr>
<td>Negotiations</td>
<td>Are lengthy - a major purpose</td>
<td>Proceed quickly</td>
</tr>
<tr>
<td></td>
<td>is to allow the parties to</td>
<td></td>
</tr>
<tr>
<td></td>
<td>get to know each other</td>
<td></td>
</tr>
<tr>
<td>Competitive bidding</td>
<td>Infrequent</td>
<td>Common</td>
</tr>
</tbody>
</table>
APPENDIX II

FORCES GOVERNING COMPETITION IN AN INDUSTRY

Threat of new entrants

The industry
Jockeying for position among current competitors

Bargaining power of suppliers

Bargaining power of customers

Threat of substitute products or services
APPENDIX III

FOREIGN PHARMACEUTICAL COMPANIES IN PRC
ACHIEVING MORE US$10 MILLION SALES IN 1991

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. JV Operations Established before 1992</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Xian-Janssen Pharm. Corporation</td>
<td>Belgium</td>
<td>JV Mfg. (1989)</td>
<td>120</td>
</tr>
<tr>
<td>Tianjin-SKB Pharm. Corporation</td>
<td>U.S.</td>
<td>JV Mfg. (1986)</td>
<td>82</td>
</tr>
<tr>
<td><strong>II. JV/licensee Operations Established in 1992 or after</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Takeda/Meiji/Yamanouchi</td>
<td>Japan</td>
<td>Import Bulk</td>
<td>100</td>
</tr>
<tr>
<td>Shanghai No. 2 Pharm. Corporation</td>
<td>Sweden</td>
<td>Import Finished License Mfg. (1992)</td>
<td>11</td>
</tr>
</tbody>
</table>
### APPENDIX IV

**GENERIC STRATEGIES**

#### Strategic Advantage

<table>
<thead>
<tr>
<th>Broad (Industrywide)</th>
<th>Broad Cost <em>(local brands)</em></th>
<th>Broad Differentiation <em>(JV made foreign brands)</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic Target</td>
<td>Focus Cost</td>
<td>Focus Differentiation <em>(import finished foreign brands)</em></td>
</tr>
<tr>
<td>Narrow (Particular segment only)</td>
<td>Low Cost</td>
<td>Differentiation</td>
</tr>
</tbody>
</table>

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56
APPENDIX V

SUMMARY OF THE PHARMACEUTICAL INDUSTRY ANALYSIS

POTENTIAL ENTRANTS

- Government Policy
- Economies of scale
+/- Product differentiation
- Capital requirements
+/- Switching costs
- Access to distribution
- Expected retaliation

SUPPLIERS

- Differentiation of inputs
- Presence of substitution inputs
- Threat of forward integration relative to threat of backward integration by firms
- Impact of inputs on costs or differentiation

INDUSTRY COMPETITORS

- Industry growth
- Fixed costs
+/- Differentiation cost
0 Diversity of competitors
+ Corporate stakes
+ Exit barriers
+ No. of competitors

BUYERS

+/- Bargaining leverage
- Buyer volume
+ Impact on quality performance
+/- Price sensitivity
+/- Brand identity

SUBSTITUTES

- Relative price performance of substitutes
- Switching costs
+ Buyer propensity to substitute

Key:  + = Make industry more attractive
      - = Make industry less attractive
      0 = Neutral to industry
## APPENDIX VI

### JOINT VENTURE/LICENSING PHARMACEUTICAL PROJECTS 1990-92

<table>
<thead>
<tr>
<th>Company</th>
<th>Project</th>
<th>Completed by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dalian Pfizer Pharm. Corp.</td>
<td>Formulation plant</td>
<td>end 91</td>
</tr>
<tr>
<td>Hua Ming Pharm. Corp.</td>
<td>Aramycin subdivision</td>
<td>May 90</td>
</tr>
<tr>
<td>Guangzhou Guanghua Pharm. Corp.</td>
<td>External Contraceptive</td>
<td>Mar 90</td>
</tr>
<tr>
<td>Xinan Pharm. Corp.</td>
<td>Cephalexin lyophilize and subdivision</td>
<td>end 91</td>
</tr>
<tr>
<td>Nanjing No. 2 Pharm. Corp.</td>
<td>Oral Contraceptive</td>
<td>Sep 90</td>
</tr>
<tr>
<td>Shanghai No. 2 Pharm. Corp.</td>
<td>License Mfg. of Madopar</td>
<td>1992</td>
</tr>
<tr>
<td>Guilin-Yamanouchi Pharm. Corp.</td>
<td>Famotidine tablet</td>
<td>Jul 91</td>
</tr>
<tr>
<td>Chongqing-Glaxo Pharm. Corp.</td>
<td>Ventolin</td>
<td>Nov 91</td>
</tr>
</tbody>
</table>
APPENDIX VII

GEOGRAPHICAL ALLOCATION OF MARKET SEGMENTS
BASED ON ECONOMIC ACTIVITY AND HEALTH CARE SUBSIDY

Key:
★ Coastal cities & Special Economic Zones (Shenzhen, Shanghai, Guangzhou, Beijing, Tianjin): High economic activity and low health care activity
★ High economic activity and high health care subsidy
★ ★ Low economic activity and high health care subsidy
★ ★ ★ Low economic activity and low health care subsidy
APPENDIX VIII

MATRIX OF ENTRY STRATEGY AND PORTFOLIO STRATEGY

<table>
<thead>
<tr>
<th></th>
<th>Patented in PRC</th>
<th>Unpatented in PRC</th>
<th>Unpatented worldwide</th>
</tr>
</thead>
<tbody>
<tr>
<td>JV operations</td>
<td>Focus Differentiation*</td>
<td>Broad Differentiation**</td>
<td>--</td>
</tr>
<tr>
<td>Licensing</td>
<td>--</td>
<td>Broad Cost**</td>
<td>Broad Cost**</td>
</tr>
<tr>
<td>Exporting</td>
<td>Focus Differentiation***</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

Key:

* Responsible for manufacturing and marketing, or marketing only
** Fully responsible for manufacturing and marketing
*** Product manufactured abroad but marketed by JV
APPENDIX IX

MATRIX OF TARGETING STRATEGY AND PORTFOLIO STRATEGY

<table>
<thead>
<tr>
<th>Economic Activity</th>
<th>Hi</th>
<th>Hi</th>
<th>Lo</th>
<th>Lo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Care Subsidy</td>
<td>Hi</td>
<td>Lo</td>
<td>Hi</td>
<td>Lo</td>
</tr>
<tr>
<td>Patented in PRC</td>
<td>★</td>
<td>★</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Unpatented in PRC</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>--</td>
</tr>
<tr>
<td>Unpatented worldwide</td>
<td>--</td>
<td>--</td>
<td>★</td>
<td>★</td>
</tr>
</tbody>
</table>

Key: ★ Appropriate strategy to maximize the potential of the market segment and the specific group of products.
REFERENCES

Howarth, Frances (1992), *China Market Atlas*. Hong Kong: Business International Asia/Pacific Ltd.


