

The History and Analysis of the Pharmaceutical Industry

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Executive Summary

This report provides an analytical strategic review of the pharmaceutical industry; its origins, evolution, development and competitive environment within which it operates and the strategic issues facing the industry. The report also offers an overview of the industry, its key players, their strategic outlook, the impact of technological developments and other strategic issues facing the industry.

The latter sections of the report focuses on the industry's leading firm, Pfizer\Pharmacia.

The Pharmaceutical Industry

1. Origins and Evolution

The modern pharmaceutical industry is a highly competitive non-assembled¹ global industry. Its origins can be traced back to the nascent chemical industry of the late nineteenth century in the Upper Rhine Valley near Basel, Switzerland when dyestuffs were found to have antiseptic properties. A host of modern pharmaceutical companies all started out as Rhine-based family dyestuff and chemical companies e.g. Hoffman-La Roche, Sandoz, Ciba-Geigy (the product of a merger between Ciba and Geigy), Novartis² etc. Most are still going strong today³.

Over time many of these chemical companies moved into the production of pharmaceuticals and other synthetic chemicals and they gradually evolved into global players. The introduction and success of penicillin in the early forties and the relative success of other innovative drugs, institutionalized research and development (R&D) efforts in the industry⁴. The industry expanded rapidly in the sixties, benefiting from new discoveries and a lax regulatory environment. During this period healthcare spending boomed as global economies prospered. The industry witnessed major developments in the seventies with the introduction of tighter regulatory controls, especially with the introduction of regulations governing the manufacture of 'generics'⁵. The new regulations revoked permanent patents and established fixed periods on patent protection for branded products, a result of which the market for 'branded generics'⁶ emerged.

2. Environmental Analysis (PEST)

Technological advancements, tighter regulatory-compliance overheads, rafts of patent expiries and volatile investor confidence have made the modern pharmaceutical industry an increasingly tough and competitive environment. Below is an analysis of the structure of the pharmaceutical industry using the PEST (political, economic, social and technological) model.

1 Non-assembled industries are industries that do not rely on manufactured or component parts or materials e.g. chemicals, glass, woodwork etc.

2 Novartis was later formed in the 1990s by the merger of Sandoz and Ciba Geigy

3 Batiz-Lazo and Holland, Strategy and Structure of the Pharmaceutical industry June 2001

4 The importance of R&D was especially prominent due to the co-location of universities and educational research institutes such as the Universities of Basel, Freiburg and Strasbourg in the Upper Rhine Valley area (BioValley).

5 Generics' are medicines manufactured after patent expiry by another pharmaceutical and usually sold at a cheaper price.

⁶ Branded generics are generic products which offer a small advantage and which are sold at a price above the lowest-priced generics.

Increasing Political Attention:

Over the years, the industry has witnessed increased political attention due to the increased recognition of the economic importance of healthcare as a component of social welfare. Political interest has also been generated because of the increasing social and financial burden of healthcare. Examples are the UK's National Health Service debate and Medicare in the US..

Economic Value Added:

In the decade to 2003 the pharmaceutical industry witnessed high value mergers and acquisitions⁷. With a projected stock value growth rate of 10.5% (2003-2010) and Health Care growth rate of 12.5% (2003-2010), the audited value of the global pharmaceutical market is estimated to reach a huge 500 billion dollars by 2004. Only information technology has a higher expected growth rate of 12.6%. Majority of pharmaceutical sales originate in the US, EU and Japanese markets. Nine geographic markets account for over 80% of global pharmaceutical sales these are, US, Japan, France, Germany, UK, Italy, Canada, Brazil and Spain. Of these markets, the US is the fastest growing market and since 1995 it has accounted for close to 60% of global sales. In 2000 alone the US market grew by 16% to \$133 billion dollars making it a key strategic market for pharmaceuticals.

The Social Dimension:

Good health is an important personal and social requirement and the unique role pharmaceutical firms play in meeting society's need for popular wellbeing cannot be underestimated. In recent times, the impact of various global epidemics e.g. SARS, AIDS etc has also attracted popular and media attention to the industry. The effect of the intense media and political attention has resulted in increasing industry efforts to create and maintain good government-industry-society communications.

Technological Advances:

Modern scientific and technological advances in science is forcing industry players to adapt ever faster to the evolving environments in which they participate. Scientific advancements have also increased the need for increased spending on research and development in order to encourage innovation.

Legal Environment:

The pharmaceutical industry is a highly regulated and compliance enforcing industry. As a results there are immense legal, regulatory and compliance overheads which the industry has to absorb. This tends to restrict it's dynamism but in recent years, government have begun to request industry proposals on regulatory overheads to so as not to discourage innovation in the face of mounting global challenges from external markets.

⁷ Examples are Pfizer\Pharmacia, Glaxo-Wellcome\SmithKline-Beecham and Novartis (a merger between Sandoz and CibaGeigy).

3. Structural Industry Analysis (Porter's Five Forces)

This section provides a summary positional analysis of the pharmaceutical industry using Porter's Five Forces model (see diagram below)

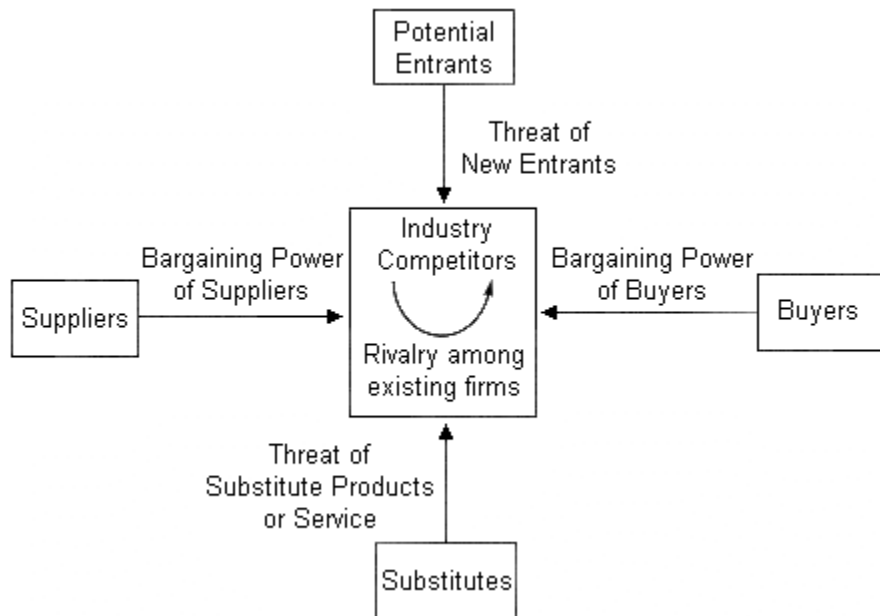


Figure: Porter's Five Forces Model for Industry Analysis⁸

- Barrier to entry: High (Pharmaceuticals). Cost of R&D and patent limitations
- Industry Competition: High. Advantages gained by first mover advantage (patents)
- Suppliers: supplier power is low
- Buyers: buyer power is low
- Substitutes: low (with patents) medium (after patent expiry)

Overall, the pharmaceutical industry shows an upward trend in its core markets. The industry remains highly valued, has a favourable market position with strong financial make-up and strong earnings growth. Its future potential demand trend is positive and despite increased competition the industry still shows a continuing upward growth momentum. Datamonitor's⁹ forecast of the leading 16 pharmaceutical companies for 2001 to 2007 suggests that combined sales will grow at a minimum rate of 5.2 percent based on the potential of their product pipeline.

⁸ Figure culled from <http://www.brs-inc.com/porter.asp>

⁹ Datamonitor is a leading business information company specializing in industry analysis.

4. Strategic Issues Facing The Industry

The strategic issues shaping the modern pharmaceutical industry are:

Industry Consolidation:

Merger activity has been intense within the industry in the last decade. Analysts believe that three firms; GlaxoSmithKline, Bristol-Myers Squibb and Merck are likely candidates to be directly involved in the next round of industry consolidation. Eli Lilly and AstraZeneca would make the best partners for GlaxoSmithKline, combining the latter's commercialization strengths with a partner's valuable portfolio and pipeline. A merger with Merck and Johnson may provide a complementary portfolio and a short-term revenue boost, but the long term consequences of such a deal would be a cause of concern if pursued due to the monopolistic consequences such a merger could have.

Science and Innovation:

Over the last decade the knowledgebase of the pharmaceutical sciences has changed dramatically and continues to change at a fairly high rate. As new technologies and bodies of scientific knowledge emerge, whole new sets of opportunities and threats are being introduced. Breakthroughs in science, innovation and technology continue to create novel opportunities for new products and processes. This has increased the pace of the industry and major players must keep up with changes else become vulnerable. Over the last decade, we have seen this happen as companies that were not very effective in research and new product development were acquired.

Increased Competition:

A major issue facing the industry is the intense competition and the changing face the pharmaceutical market. The industry has seen a legion of new market entrants, increased competition among key players and industry consolidation. A host of large-scale mergers and acquisitions have taken place over the last two decades. Competitive advantage within the industry is being constantly redefined and to maintain their presence, key industry players are being forced to revamp their organisational structure, overcome huge barriers in R&D, clinical trials simply to ensure continuity and maintain profitability.

Changing Consumer Profile:

The profile of the pharmaceutical consumer has changed. Consumers are now better informed and there are expectations on the industry to show that their products deliver better health and greater economic value. Also, in previous decades governments were either the sole or major purchasers of pharmaceutical products but the current trend shows that healthcare costs are being constantly being shifted away from the government, which acted as the traditional social purchaser, over to health insurance companies and common individuals. The increasing price sensitivity of the common consumer and financial muscle of healthcare agencies and health-insurance companies is forcing firms in the industry to cut product prices thereby reducing

margins. In the future, as government shifts more healthcare costs to the end consumer, consumers will increasingly pay more for access to healthcare and medicines and this will further increase their price sensitivity.

Ageing Populations:

Due to ageing global populations there is external pressure on the industry to reduce the price and long-term dependence on pharmaceuticals. This, in addition to the market requirement for the industry to improve current new medicines and lower product costs is increases the pressure on industry to aggressively reduce it's cost base without compromising gross spend on research and development which most firms require to maintain competitiveness.

Changing Geo-political Environment:

The political environment worldwide has become a major force. Due to the socio-political consequences of healthcare and medicines, the pharmaceutical industry is facing increasing political pressure to reduce prices and control costs. In certain geo-political areas, particularly in developing economies, government are increasing pressure on pharmaceutical firms to act in the social interest and this is likely to intensify in the future. Examples are issues around AIDS in Africa. African government's policies are becoming increasingly stringent with regards to the conduct of pharmaceutical firms.

Decreasing Consumer Influence:

A unique feature of the pharmaceutical market is that the final consumer has little or no say in the choice of medicines and treatments. Medical doctors, general practitioners and pharmacists usually act as agents of the final consumer and they are largely responsible for the consumer's purchasing decisions. As a result of this pharmaceutical companies' direct a sizeable proportion of their marketing efforts at these agents. With the advent of the internet, consumer enlightenment has the capacity to erode the influence of the medical agents as consumers have easier access to medical information and treatments.

5. Analysis of Key Industry Participants and Strategy

This section provides a descriptive overview on the top three pharmaceutical firms worldwide.

Pfizer\Pharmacia:

After its merger with Warner-Lambert in July 2000, Pfizer became the world's largest pharmaceutical company. The strong commercial potential of Pfizer's product portfolio and it's strong products pipeline, has caused Pfizer to invest heavily in product support, global sales force expansion and increased R&D spend. In April 2003 the merger of Pfizer Inc. and Pharmacia Corporation was announced. The estimated \$60 billion merger consolidates Pfizer's position as the world's largest pharmaceutical company. The merged entity will control 11% of the global pharmaceutical market, from 8%, with annual revenue estimated to increase from \$32 billion to \$46 billion. The new Pfizer will also control 50% more of the market than its closest

rival, the world's second largest drug company, GlaxoSmithKline¹⁰. The European Commission approved the merger but demanded that the firm divest pharmaceuticals in nine different areas in response anti-competitive charges.

GlaxoSmithKline:

The December 2000 merger of GlaxoWellcome and SmithKline Beecham created the GlaxoSmithKline, the world's second largest pharmaceutical company with a global market share of 7%. GSK has global pharmaceutical sales of over \$22bn and also the largest share in several therapeutic areas, including the vaccine and over-the-counter products (OTC). However, GSK is still arguably a more global company (in terms of spread) than Pfizer, given that GSK generates a far higher proportion of its sales outside the North American market. GSK is ahead of Pfizer in every other region outside North America. GSK generated a relatively high \$6.0bn, or 26.6% of its sales, in the European market in the year to September 2002 compared to Pfizer's \$3.8bn (16.9%). The region in which Pfizer's market share is closest to GSK's is Africa, Asia and Australasia; this is due mainly to GSK's strong position in the large Japanese market, which has been targeted by Pfizer for future growth.

Merck & Co:

Merck is the third-largest global pharmaceutical company. Excluding organic growth, for Merck to rival the top two it will have to acquire at least one of the 15 leading pharmaceutical firms in the world - a smaller acquisition would not gain it sufficient market share to overtake either Pfizer or GSK. While it has not gone for a full-blown merger, Merck, like other drug companies, has increased the number of collaborations with external and biotech firms. It has so far signed close to 50 deals with research partners in the past 5 years. Merck has also teamed with Schering-Plough to develop respiratory drugs. Merck's strategy is to focus on breakthrough drugs, rather than go the consolidation route or imitate competitors with so-called "me-too" products. Unfortunately its current product pipeline is rather weak and Merck may come under increased pressure to merge as a means of gaining market share and growth. Analysts believe Merck's ideal merger candidate would be Johnson & Johnson due to the little overlap with Merck's pharmaceutical portfolio.

Ranking	Corporation	Market Share* (%)
1	Pfizer*	7.5
2	GlaxoSmithKline	6.9
3	Merck & Co	5.1
4	AstraZeneca	4.4
5	BMS	4.1
6	Novartis	3.9
7	Johnson	3.8

¹⁰ GlaxoSmithKline controls 7% of the global pharmaceutical market.

8	Aventis	3.7
9	AHP	3.2
10	Pharmacia*	3.1

*2003 Pre Pfizer\Pharmacia merger rankings

6. Pfizer – SWOT Analysis and Strategy Review

SWOT¹¹ Analysis:

Since inception in 1849, Pfizer has grown from a small family firm with two employees into a global enterprise with 95,000 employees on six continents. Pfizer has increasingly focused its efforts on R&D and this remains its core business strategy. Pfizer's strengths lie in its strong pipeline of innovative pharmaceutical compounds and strong marketing capabilities. Pfizer's performance is characterized not only by size, but also by growth. In 1999, Pfizer achieved 20% revenue growth. Pfizer has also set records in each of the past three years to 2003 with the most successful product launches in pharmaceutical history Lipitor, Viagra and Celebrex. Pfizer's strength in R&D, marketing, and sales has made them a partner of choice for many companies in the pharmaceutical industry and they are involved in a wide variety of research collaborations and a large number of licensing agreements with universities, institutes and organizations.

An outline SWOT analysis of the world's largest pharmaceutical firm follows next.

Strengths

- R&D innovation with a broad therapeutic coverage
- Marketing strength in major geographical and therapeutic areas
- Existing Patent protection for a number of years on key products

Opportunities

- Decreasing development time through favorable R&D collaborations and internal efforts
- Emergence of integrated global markets and globalisation for new products
- Co-marketing agreements with companies wishing to capitalize on Pfizer's marketing strengths, providing Pfizer with strong products and therefore revenue growth

Weaknesses

- Discontinuation of products in the latter stages of development
- Co-marketing agreements can limit Pfizer's global presence
- Increased size and operational complexity makes Pfizer a less agile company

Threats

- Increased competition for core products like Viagra as its high cost encourages use of cheaper alternative treatments

¹¹ SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis helps determine a company's distinctive competencies, competitive weaknesses and relevant business opportunities.

- An increase in the number of safety issues surrounding Viagra
- Competition from products similar to Pfizer's in R&D that reach the market close to or before Pfizer's products
- The new economic potential of emergent China, India and competition in diverse regional markets.

Critique and Analytical Review of Pfizer's Strategy:

Pfizer has done quite well historically and analysis has revealed that they are looking to position themselves strategically for the future. But as we enter a new era in the pharmaceutical industry with increased patent risks and lower marginal product returns, pharmaceutical firms like Pfizer must restructure their huge organizational mass to reduce structural inefficiencies, cut costs which is required to enable them compete better in the changing global environment. Due to its massive R&D push, Pfizer suffers a relatively high rate of discontinuation in pre-approval products and more focus is required to reduce resource wastage. Pfizer's lack of promising products in its early stage pipeline has left its combined pipeline relatively weaker. This pipeline deficit will not manifest for a number of years yet, and Pfizer is perhaps well positioned than most to ensure that it balances its R&D pipeline before it becomes a cause for concern in future. Pfizer's imbalanced geographical presence (the US accounts for over 60% of Pfizer's market area) may cause potential geographic limitations and can limit revenue growth should US demand weaken.

While the numbers of co-marketing and collaborative agreements, which Pfizer has established, are currently proving very favourable, agreements that geographically limit Pfizer's activities will ultimately reduce its long term potential and must be guarded against.

Finally, the economic emergence of mass production economies like India and China into the pharmaceutical fray will require new containment strategies. While this is not an immediate threat, over time the nature of competition will change and the big pharmaceutical firms must develop strategies to enable them reduce threats and seize the opportunities that are created in increasingly integrated global markets.

Going forwards, I recommend that Pfizer actions a resource/competence based analysis of its innate capabilities, those characteristics that offer Pfizer distinct competitive advantage over its industry rivals. There may be a role for using 'McKinsey's 7S Framework' to determine the firm's core advantages.

Critique of frameworks used:

PEST:

PEST(L) analysis is good as an tool to analyse the firms business environmental but it does not consider factors internal to the companies themselves so must be used in addition to other analytical tools such as SWOT or McKinsey's 7 S framework (strategy, structure, systems, style, staff and stakeholders) to provide a more complete picture of the firm's strategic environment.

SWOT:

As a strategic modelling tool, SWOT analysis can be very subjective and is not always a reliable guide. Because perspectives differ, two people rarely come-up with the same final version of SWOT so it's best use is as a guiding tool, it is not prescriptive.

Porter's Five Forces:

The 5 forces approach can be used in initial diagnosis and as an aid to strategy development. Its main value is as a thought provoking aid to help arrive at a shared understanding of the threats and opportunities facing the firm. Whilst it is a powerful and simple tool for analysis, it doesn't look in great detail about the choices or the ease or difficulty in following a particular course of action

7. Conclusion

The Pharmaceutical industry has a lot of yet untapped potential and it will be interesting to see how the industry matures over the long term. Undoubtedly, the long history and global expertise of firms like Pfizer, GSK and Merck will stand them in good stead to create and benefit from emerging global opportunities. Notwithstanding it's strengths, complacency must be guarded against because smaller, agile and innovative firms are on the prowl and all it takes for the small upstarts is a superdrug that can change the entire face of the industry. We've seen it happen in the Information & Communications industry, for all we know pharmaceuticals may just be next.

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The information contained in this report was accessed from a variety of public, corporate and classified sources and every effort has been made to acknowledge these sources where appropriate.

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APPENDIX 1

Process of Strategic Analysis

The purpose of strategic analysis is to provide options available for firms to achieve suitable market positions and gain competitive advantages.

Below are some suggestions processes for undertaking strategic analysis:

- **Overall strategy**
Describe the overall strategy for the company's industry, the current conditions as well as projects for sales, profits, rate of growth and others factors.
- **Specific strategies**
Narrow the focus to a particular segment of the strategy in the company operates. It's

used to find out what are the needs and wants of customers. It describes the present and projected influencing conditions and identifies competitors and complements.

- **Competitive factors**

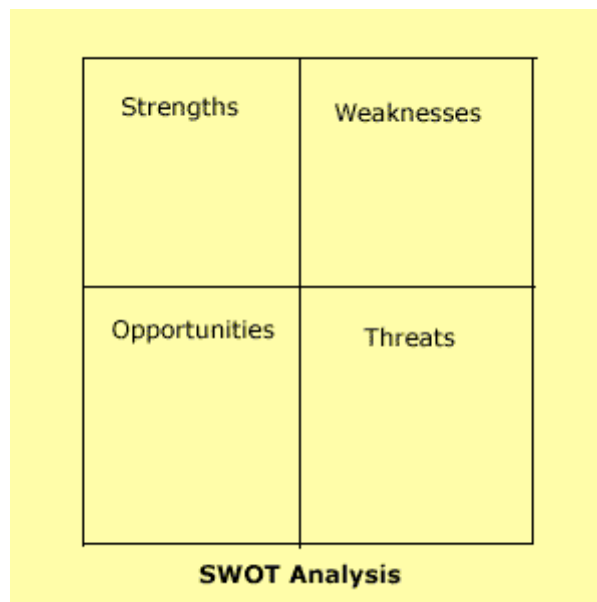
Analyzes the competitive nature of the industry, the height of entry barriers, substitute products, etc. Helps us find out the strength and weakness of industry competitors, as well as identifying the opportunities and threats that may appear.

- **Macroenvironmental influences**

Analyzes the political, economic, sociocultural and technological factors. And from the analysis, evaluates the impact of these factors on the product or service. PEST analysis can be used to determine macroenvironmental influences.

SWOT Analysis

SWOT analysis is a tool for auditing an organization and its environment. **SWOT** stands for **S**trengths, **W**eaknesses, **O**pportunities, and **T**hreats.



It is important to consider both direct and indirect competition in order to develop your competitive strategy. To complete an analysis of competition, determine the strengths and weakness of the competitors as well as examining the specific aspects of their operations. Questions like: "Do they have a good service?", "Are they financially stable?" will help in the analysis of the competition. **SWOT** analysis can be applied on you or your competitor. **S**trengths and **W**eaknesses are internal factors while **O**pportunities and **T**hreats are external factors. For instance, an opportunity could be a developing strategic such as the Internet whereas a threat could be a new competitor in your home strategic.

PEST Analysis

It is very important that an organization considers its environment before starting strategic analysis. The environment includes

1. The internal environment e.g. staff (or internal customers)
2. The micro-environment e.g. external customers, agents and distributors, suppliers, competitors, etc.
3. The macro-environment e.g. Political (and legal) forces, Economic forces, Sociocultural forces, and Technological forces. These are known as PEST factors.

1. **Political Factors**

The political arena has a huge influence upon the regulation of businesses, and the spending power of consumers and other businesses. You must consider issues such as:

- How stable is the political environment?
- Will government policy influence laws that regulate or tax your business?
- What is the government's position on strategicing ethics?

2. **Economic Factors**

The firm must consider the state of a trading economy in the short and long-terms. This is especially true when planning for global strategies and may include:

- Interest rates
- The level of inflation

3. **Sociocultural Factors**

The social and cultural influences on business vary from country to country. It is very important that such factors are considered. Factors include:

- How much time do consumers have for leisure?
- What are the roles of men and women within society?
- How long are the population living?
- Are the older generations wealthy?

4. Technological Factors

Technology is vital for competitive advantage, and is a major driver of globalization. The firm must consider the following factors:

- Does technology allow for products and services to be made more cheaply and to a better standard of quality?
- Do technology offer consumers and businesses more innovative products and services such as Internet banking, new generation mobile telephones, etc?

APPENDIX 2

PFIZER INC – PRE MERGER COMPANY PROFILE