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PFIZER AND THE CHALLENGES OF THE PHARMACEUTICAL INDUSTRY (A)[[1]](#endnote-1)

Renate Kratochvil and Phillip C. Nell wrote this case solely to provide material for class discussion. The authors do not intend to illustrate either effective or ineffective handling of a managerial situation. The authors may have disguised certain names and other identifying information to protect confidentiality.

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In July 2018, one of the US president’s tweets created turmoil among managers of pharmaceutical companies:

Pfizer & others should be ashamed that they have raised drug prices for no reason. They are merely taking advantage of the poor & others unable to defend themselves, while at the same time giving bargain basement prices to other countries in Europe & elsewhere. We will respond![[2]](#endnote-2)

This sounded like a threat, which it was presumably intended to be. However, only weeks before, the picture had looked rosier for Pfizer Inc. (Pfizer) and its chief executive officer (CEO), Ian Read. In the fiscal year 2017, Pfizer had successfully maintained its position as the leading global pharmaceutical corporation in terms of its revenue from pharmaceutical products of US$52.8 billion[[3]](#endnote-3) (see Exhibit 1).

Nevertheless, in the last few years, Pfizer had had many setbacks other than those generated by the president’s threat. For example, a comprehensively planned merger with Allergan Plc (Allergan) had to be stopped, and competitors were closing in on Pfizer’s leading position (see Exhibit 2). In addition, drug patents were about to expire, and the company’s entrance into new emerging markets was creating many problems. However, the entire pharmaceutical industry, not just Pfizer, was being challenged by various issues. While corporations were recording decreasing global average returns on investment (10.1 per cent in 2010 and 3.2 per cent in 2018), they were also experiencing increased research and development (R&D) costs ($1.2 billion in 2010 and $2.0 billion in 2017).[[4]](#endnote-4) Furthermore, companies from other industries—such as the electronic device producer, Philips—were entering the market, and some emerging-market companies were becoming unexpectedly strong.[[5]](#endnote-5) Given these challenges, Read needed answers to some key questions: Do these changes mark a turning point for the whole industry? Does Pfizer need to act, and if so, how?

The pharmaceutical INDUSTRY

The pharmaceutical industry was complex, with some important trends. Globally, in 2018, pharmaceuticals represented more than 16 per cent of health expenditures.[[6]](#endnote-6) In 2017, global sales were recorded at $1.2 trillion (see Exhibits 3 and 4) and the demand for pharmaceuticals was rising.[[7]](#endnote-7) Historically, the United States has been the country with the highest spending on pharmaceuticals, with an average per-person spend of $1,162 in 2017. Viewed with respect to global pharmaceutical sales in 2018, the United States was the biggest market with a share of 48 per cent. Europe (including Russia and Turkey) accounted for 22 per cent; Japan accounted for 8 per cent; Latin America accounted for 5 per cent; and the regions of Africa, Asia (excluding Japan), and Australia accounted for 17 per cent (see Exhibit 5).

Health-care spending was known to be increasing for a variety of reasons, and this increase suggested that demand for pharmaceuticals was likely also to be rising.

First, an ageing population led to increased demand (see Exhibit 6).

Second, the supply of biologics had increased substantially, amounting to 25 per cent of the total pharmaceutical market in 2017 (see Exhibit 7). Biologics were highly effective drugs for certain classes of disease such as cancers, rheumatism, infectious diseases such as HIV and hepatitis, diabetes, and neurological disorders. They represented a very expensive form of treatment, usually lasting around a year and with costs averaging $25,000 per patient. Biologic drugs were produced using animal cells or microorganisms, and the molecule sizes were many times those of conventionally synthesized drugs. A study by the consultancy company McKinsey concluded that the development and production costs for biologics, as well as the complexity of a biologic drug, equated with those of building a business jet.[[8]](#endnote-8) Due to their efficacy, biologics were in high demand.

Third, globally increasing awareness of the importance of early health checks, the use of prophylactic drugs (e.g., vaccinations), and better information availability had all further increased demand.[[9]](#endnote-9)

Finally, favourable growth rates in pharmaceutical product purchases had been predicted several years ago for developing markets (see Exhibit 8). However, the road to success in developing countries had in fact been bumpy for Western pharmaceutical companies. Local producers (mainly generics producers) often retained a higher market share and more power in these developing markets than Western pharmaceutical companies. Furthermore, relatively weak patent law, slowing economic growth, intense local competition, and government efforts to reduce health-care costs (or at least to prevent their growth) had reduced company expectations of rapid success.[[10]](#endnote-10)

Competition

In general, the pharmaceuticals market could be divided into two main categories: prescription drugs, which could only be prescribed by doctors; and over-the-counter (OTC) drugs, which could be purchased without prescription because they were considered comparatively safe in terms of self-diagnosis and self-medication. The latter included products such as painkillers, nasal sprays, food supplements, and vitamins. Under some jurisdictions, these could also be sold in supermarkets and drugstores.[[11]](#endnote-11) In the United States, OTCs made up 16 per cent of the total market in 2013, similar to the percentage in other major markets (see Exhibit 9).

Within the prescription drug market, a further distinction was usually made between “innovative” drugs (also called “branded” drugs) and “generics.” Innovative drugs underwent extensive R&D processes and clinical trials using humans and animals. In the United States, once they were approved by the Federal Drug Agency (FDA), innovative drugs were patent protected, giving the developer firm the exclusive right to market the product for several years (20 years in the United States). In rare cases, extensions were requested; for instance, if a molecule had been substantially modified. Patents protected the particular chemical structure only. Other innovative pharmaceutical companies that had developed a different drug treating the same disease could thus apply for a distinct patent, and this resulted in “between-patent competition.”

As soon as a firm lost patent protection for a drug (i.e., for the active ingredient), other firms could market a product based on the same active ingredient, as long as FDA approval and bioequivalence standards were met. Such drugs were called generics,and they resulted in “within-patent competition.”[[12]](#endnote-12) Generics were marketed under different names from those of the original branded products.

Generic copies of biologics were called biosimilars; due to the specifics of biologic manufacture, it was not possible to copy them precisely (as could be done relatively easily in the case of conventional or synthetic drugs). Copying biologics could only result in similar, but not identical, drugs.[[13]](#endnote-13)

The roles of doctors and patients

Because self-medication with prescription drugs was illegal, patients needed to go to doctors or hospitals to obtain them. In most health-care systems, doctors were relatively free to decide on treatment and medication. They normally had the choice between different substances and would suggest a particular drug depending on availability. To save on costs, many countries encouraged the prescription of generics. In 2017, these made up only 10 per cent of total prescription sales (in $), but generics had been outgrowing branded drugs for many years (see Exhibit 10).

In general, doctors tended to choose products that they feel provided the best treatment for a given patient. The market power of expensive innovative drugs was sustained by the fact that, in most countries, there were no regulations concerning cost cutting or a preference for generics. Moreover, depending on country and disease, patients were frequently not required to pay for drugs because the state or private insurance schemes covered this expense.

As doctors had a large influence on which brand was purchased, pharmaceutical firms’ marketing activities tended to be targeted at doctors. Moreover, depending on the law, the extent to which direct customer marketing of prescription drugs was permitted varied. Sales representatives had always been the main communication channel between pharmaceutical firms and doctors,[[14]](#endnote-14) and firms invested in sales to such a considerable extent that doctors from time to time complained about over-marketing. Many firms, however, were not prepared to reduce the size of their sales forces unless the competition did the same: they were trapped in a “marketing-and-sales arms race.”[[15]](#endnote-15) As a result, pharmaceutical firms had in recent years spent significantly more on prescription sales activities (including expenditure on sales, marketing, and administrative costs) than on R&D. For instance, in 2017, Pfizer spent $7.6 billion on R&D but an enormous $45.4 billion on prescription sales (see Exhibit 11).

In 2010, the US Congress demanded greater transparency in marketing activities in order to reduce the number of corruption allegations. In response to the demands of Congress, Pfizer cut down on payments to US health-care professionals—by 11 per cent in 2012—and reduced spending on company-sponsored dinners by more than half.[[16]](#endnote-16) Since 2014, firms in the United States had been required to enter payments to doctors into a public database.[[17]](#endnote-17) In addition to these tighter regulations, doctors had become less welcoming towards sales representatives; they said they did not feel well informed by them and so the doctors instead tended to favour online information. A recent study revealed that 65 per cent of physicians were interested in getting clinical information online.[[18]](#endnote-18) Doctors also generally lacked the time to meet with sales representatives because they were under pressure to see increasing numbers of patients.[[19]](#endnote-19)

In Europe, such marketing activities were also limited by governments. For example, in Switzerland, each pharmaceutical company could only target a given doctor once a year. In Slovakia, the government introduced a law that stated that doctors were required to pay a 19 per cent tax on both financial and in-kind benefits (e.g., meals, events, hotels) received from pharmaceutical companies.

Yet the need for marketing activities became more important, in particular as the trend of self-medication was increasing. This was also related to the growing amount of information available online—a source frequently used by patients in addition to, or even in preference to, their doctors’ advice. This was a delicate issue for pharmaceutical firms because, in Europe, direct marketing could not be targeted at patients.[[20]](#endnote-20) Pharmaceutical companies could circumvent such regulations by using new digital tools such as patient and physician portals and by promoting social-media posts. Extensive information about specific drugs was offered online, and pharmaceutical companies also provided information during discussions on various online health platforms.[[21]](#endnote-21) Nevertheless, when compared to some other industries, by 2018, pharmaceutical companies had not yet taken full advantage of social and other online media.[[22]](#endnote-22)

The development of drugs and the patenting process

In 2018, most pharmaceutical companies were highly vertically integrated compared to other industries and so were carrying out R&D, drug production, and marketing and sales activities themselves. In terms of its R&D, the innovative sector of the pharmaceutical industry was, like the oil industry, a “self-liquidating” industry: both had to continually develop new products, and both experienced long product lead times.

In 2015, the pharmaceutical industry dedicated 15 per cent of its net sales to R&D (see Exhibit 12). In the United States alone, more than $48 billion was spent in 2015 on pharmaceutical R&D (see Exhibit 13), a long and resource-intensive process involving several phases. In 2016, the European Federation of Pharmaceutical Industries and Associations (EFPIA) estimated that it took, on average, 12 years for a product to reach the market (see Exhibit 15).

In general, the process started with the identification of a target (e.g., a protein) in the human body upon which the drug would be required to act and the development of an initial formulation (preparation). These preparations were then repeatedly tested and modified (up to 10,000 times) in order to achieve the desired effect and minimize side effects. If preliminary results were promising, a patent[[23]](#endnote-23) was registered in order to obviate potential competition. These new chemical entities (NCEs) were subject to pre-clinical testing, often on animals. The objective was to investigate the drug’s effectiveness and any possible side effects. This process of laboratory testing would take about three and a half years. The pre-clinical test results would subsequently be evaluated by the relevant health authority and if appropriate, permission would be given for further (clinical) tests. In the United States, the regulatory agency was the FDA, comparable to the European Drug Agency (EDA).

On average, only five out of every 10,000 NCEs would make it to the clinical testing stage, from which point on they would be designated “investigational new drugs.”[[24]](#endnote-24) In 2016, the average cost of finding and developing a new drug amounted to approximately $1.9 billion.[[25]](#endnote-25)

If Phases I to III of clinical testing (duration about 6 years) showed positive results in terms of effectiveness and side effects, a new drug would be approved for marketing; this last stage could take up to two and a half further years.[[26]](#endnote-26) However, reaching this stage did not necessarily mean that the drug would stay on the market in its current form. It continued to be subject to further tests, the results of which might require the drug to be modified or, in some cases, taken off the market completely. The new-product success rate was one or two per 10,000.[[27]](#endnote-27) The lengthy launch period for new drugs was the subject of an ongoing debate, and in 2017, the US president announced the government’s intention to speed up the FDA approval process.[[28]](#endnote-28)

In the past, patent law had made it possible for many pharmaceutical firms to earn high revenues from just a few popular products. The development of these so-called “blockbuster” drugs (drugs with more than $1 billion in yearly revenues) had long been considered essential for the success of global pharmaceutical firms (see Exhibits 16 and 17). Firms would naturally try to make maximum use of patent protection, and new, globally standardized products tended to be patented and brought to market simultaneously worldwide. In exceptional situations, governments would use a patent without the consent of the patent holder in order to produce a drug and make it available to patients (a process known as “compulsory licensing”).

An innovative branded drug in a new therapeutic area was known as a “breakthrough” or “first-in-class” drug. New drugs in existing therapeutic areas were known as “follow-ons” or “me-too” drugs. Pfizer’s Viagra, for example, was a breakthrough drug when it was launched in 1998, and the company profited substantially from it until 2003, when Bayer introduced a similar product, Levitra (an example of between-patent competition).

When patent protection ended, other firms were free to start selling generic copies of the same chemical. Usually, patent expiry led to a dramatic drop in revenue, referred to as the “patent cliff.”[[29]](#endnote-29) Within-patent competition was initiated when generics producers started selling the generic copy at much lower prices. Patent expiry could have devastating effects. Between 2003 and 2011, Pfizer’s blockbuster Lipitor yielded annual revenues of $10–12 billion, but when Pfizer lost Lipitor’s patent protection in 2010, sales dropped to $4 billion in 2012 and reached a low of $1.7 billion in 2016. In 2017 alone, Pfizer lost patents for several key products, including Lyrica and Viagra. Global-pharmaceuticals forecasts anticipated that, in 2023, across all companies, $67 billion of sales would be at risk due to patent expiries. In 2017, the figure was $32 billion.[[30]](#endnote-30)

The biggest generics producer was Teva Pharmaceutical Industries Ltd. (Teva), and other big players were Mylan NV (Mylan), Cipla Ltd. (Cipla), Sun Pharmaceutical Industries Ltd. (Sun), and Sandoz International GmbH (Sandoz). Often, generics manufacturers tried to make use of any scientific progress that had taken place since the development of the original patented drug. Consequently, generics could sometimes be substantially superior to the originally branded products in terms of effectiveness and side effects. In contrast to branded products, generics were profitable despite lower price levels because their manufacture sidestepped a large proportion of the expensive development and test phases. Due to their lower prices, many governments had taken steps to improve the market position of generics, resulting in a rising proportion of generics in the global drugs market.

Recent patent disputes in emerging markets such as Brazil and India were considered a threat to the traditional patent system. In 2018, India was the biggest global generics market in terms of the export of, and demand for, generics. Although India adopted new patent law after its accession to the World Trade Organization (WTO) in 1995, the way in which the new ruling was interpreted made it unfavourable to innovative (international) pharmaceutical companies. In 2012, for example, the Indian national court upheld the position of the Indian government and refused requests from Novartis International AG (Novartis) and Bayer AG (Bayer) for patent exclusivity for two drugs, stating that these could not be classified as “new inventions” under Indian patent law. Under compulsory licensing, Indian generics producers were then allowed to produce generics for these products by paying a license fee of about 6–8 per cent of the annual revenue to the innovator firm.[[31]](#endnote-31) In 2013, the Indian Patent Office granted the generics drugs producer Cipla the right to produce Pfizer’s patent-expiring cancer drug Sutent.[[32]](#endnote-32) These cases were decisive to the future of Indian patent law, and pharmaceutical firms feared spillover effects into other markets.[[33]](#endnote-33) Because many important patents had expired, sales of Indian generics surged. But problems, such as poor hygiene and defective processes in many Indian plants, hampered the country’s generics exports.[[34]](#endnote-34)

The supply chain

From manufacturing through to use by the patient, drugs in development went through a number of steps.

Production

The production base for most drugs consisted of fine chemicals. For branded products, fine chemicals accounted for 10–15 per cent of the final price; for generics, it accounted for up to 30 per cent. On average, half of all pharmaceutical products globally were manufactured by the pharmaceutical firms themselves; the other half were produced by firms in the fine-chemicals industry.[[35]](#endnote-35)

The chemicals consisted of standardized or customized molecules plus active agents that were processed into the final drug in tablet or fluid form. Fine chemicals were essentially raw materials or mass-produced products, generally made to a high standard by a variety of firms. As such, there were many potential suppliers. No single chemical firm had achieved a dominant market position. The pharmaceuticals industry was by far the largest buyer of fine chemicals, and frequently, a substantial percentage of a chemical company’s revenue depended on just a few pharmaceutical customers. Drugs manufacturers, for their part, had to be able to guarantee high product quality. A given drug required every factory to have precisely defined processes and permissions that were checked regularly. If a given health authority judged that there were variations in quality, safety, or effectiveness, product authorization was immediately withdrawn.

Distribution and Pricing

Wholesalers and pharmacies ensured that products reached patients. However, there were considerable differences between the United States’ and European markets. In most European markets, the health authorities set maximum mark-ups for pharmacies and wholesalers, whereas in the United States, there was more flexibility. On average, the drug manufacturer received around 66 per cent of the sale price, the wholesaler around 5 per cent, the pharmacy about 20 per cent, and the state around 9 per cent (in value-added tax and other taxes). The wholesalers would buy directly from the drug manufacturers and distribute the products to hospitals and pharmacies.[[36]](#endnote-36) To carry out this function, the wholesalers needed a license, and had to conform to certain criteria—such as keeping a safety stock so that they would be able to deliver within a short time frame.

Wholesalers, who organized the logistics of delivering drugs to pharmacies, hospitals, and health centres, delivered the majority of drugs. Europe was dominated by a multichannel system, in which multiple wholesalers would sell a given product. Large pharmacy chains, specialized pharmacies, and mail-order pharmacies were also able, to some extent, to buy drugs directly from the manufacturer. The growing importance of chains and mail-order houses in Europe, however, was leading to an increasing trend towards bypassing the distributor.

Wholesalers had been experiencing increased price pressure, resulting in tighter competition. In Europe in 2014, the average wholesale margin was around 5–10 per cent, but this varied greatly between countries, (e.g., in Sweden, it was 3 per cent, and in the Netherlands, it was 23 per cent).[[37]](#endnote-37) This pressure was to some extent due to rising packaging, delivery, and transportation costs. Increased competition had also resulted from the tendency for drug manufacturers to establish just-in-time production systems, which had caused the industry both in the United States and Europe to undergo substantial consolidation over the last few decades.

Pricing was more critical for generics manufacturers than for innovative pharmaceutical companies. The competitive generics environment played a major role in pricing. An example was the effect exerted by wholesalers and parallel imports: the wholesaler could promote the distribution of higher volumes of drugs. Some wholesalers added service activities, such as market data gathering, processing, and packaging, to their core business; some even integrated vertically, both downstream and upstream, and had taken over production and pharmacy functions. This strategy, however, was disliked by national health authorities and was therefore highly restricted in some countries.

The preclusion of parallel imports also had an impact on prices and revenue. The fragmentation of the European Union (EU) pharmaceutical market (and with this its pricing levels) led to parallel trading, where firms could buy drugs in a country with lower price levels and resell them in countries with higher price levels. Parallel trading was estimated to amount to $4.5 billion in 2016. The sale of parallel imports in the pharmacy market amounted to 1.6 per cent in Belgium, 25.5 percent in Denmark, 8.5 per cent in Germany, and 1.9 per cent in Poland.[[38]](#endnote-38)

The role of the pharmacy varied from country to country. Prescription drugs were generally available only through pharmacies, but the degree of influence of the pharmacist on the choice of drug or brand depended on the particular legal environment. Generally only doctors could decide on the drug prescribed, but in many countries, the pharmacist was allowed to replace a branded product with an unbranded one containing the same active ingredients.

**Regional Differences**

In 2013, state-supported compulsory health insurance existed in the majority of Organisation for Economic Co-operation and Development (OECD) countries. On average, 58 per cent of medication expenses in OECD countries were financed publicly (e.g., in Germany, 77 per cent; in the United States, 48 per cent). Patients and/or private health insurance (see Exhibit 18) funded the other 42 per cent.

Health systems in Europe and the United States were different. In the United States, the great majority of the population was privately insured, as there was no or little public health insurance. Moreover, until 2017 the US government had rarely commented on drug price regulation. In 2018, however, the US president announced, when meeting with US-based CEOs of pharmaceutical giants, “We have to get prices down for a lot of reasons.”[[39]](#endnote-39)

Traditionally, the US market had always been the most important market for the pharmaceutical industry worldwide, yielding high prices and margins.[[40]](#endnote-40) In Europe, state health systems were the principal purchasers of drugs, but this was becoming less of a positive for the pharmaceutical industry than it used to be. Due to increasing public health-care spending and tight national budgets, European governments had in recent years become active in the areas of price regulation and negotiation. For the pharmaceutical industry, these measures had taken on vast proportions. Tom McKillop, the CEO of AstraZeneca Plc (Astra Zeneca) from 1999 to 2006, spoke of an “extortion-like” situation. Felix Raeber, at the time head of European media relations for Novartis, described the situation as one where the pharmaceutical companies were “without control” over pricing.[[41]](#endnote-41)

One regulation method involved the state and manufacturer agreeing to set fixed prices. This meant lengthy price and reimbursement negotiations, which could delay product launch significantly. The German government in 2005, for example, became involved in price regulation and demanded sweeping price reductions. For example, Lipitor patients would in future receive reimbursement up to a certain amount only. The government also asserted, however, that if the price of Lipitor were to be reduced by a further 38 per cent, patients would receive full reimbursement. Pfizer implemented the price reduction, which had a drastic effect on its profits. It did mean, though, that the product could be kept on the market. [[42]](#endnote-42)

Governments in Europe set prices by what was known as “referencing.” Products with similar therapeutic effects were grouped together, and a lower all-in price separately determined for each group. The reimbursement system was then aligned such that the patients paid for the drugs if the price was higher than the reference price. Another measure taken by governments was known as an “all-in price markdown” that limited a product’s profit margins—one such was the Pharmaceutical Price Regulation Scheme system developed in the United Kingdom.[[43]](#endnote-43)

In 2012, an average price range of 30 per cent over or under the EU average price existed.[[44]](#endnote-44) Each country set different prices; hence price control within the EU resulted in parallel imports and lost profits for pharmaceuticals corporations. Governments, via their respective health-care reimbursement systems, influenced not only prices but also product demand. Usually, patients would get drugs expenses paid for only if the drug was classified as reimbursable by their national health-care system. Many countries established so-called “positive lists,” where all products on the list were normally reimbursed, and/or “negative lists,” where all products on the list would not be reimbursed. When a prescription drug was not reimbursed, the demand for this drug was thereby automatically limited—as patients would shy away from drugs they had to finance out of their own pockets.

Exhibit 1: Revenues of the Pharmaceutial SEgment of the top 10 Pharmaceutical Companies, 2007, 2012, and 2017 [in US$ millions]

|  |  |  |  |
| --- | --- | --- | --- |
| **Company** | **Pharmaceutical Segment** | | |
|  | **2017** | **2012** | **2007** |
| Pfizer\* | 52,800 | 67,425 | 48,371 |
| Roche\* | 44,300 | 45,304 | 34,483 |
| Sanofi\* | 36,600 | 43,223 | 37,333 |
| Johnson & Johnson\* | 36,300 | 24,368 | 23,200 |
| Merck & Co\* | 35,400 | 48,047 | 22,636 |
| Novartis\* | 33,000 | 32,508 | 22,576 |
| AbbVie | 28,200 | (18,380)\*\* | N/A\*\* |
| Gilead Sciences\* | 26,700 | 8,385 | 3,026 |
| GlaxoSmithKline | 24,000 | 28,700 | 30,700 |
| Amgen | 22,900 | 15,582 | 14,268 |

Notes: \*Including generic drugs. For example, Pfizer included innovative as well as generic drugs in its annual pharmaceutical segment revenue; \*\*Abbott Laboratories: In January 2013, Abbott was separated into two companies: Abbott and AbbVie. Abbott was specializing on medical products, while AbbVie was responsible for research-based pharmaceuticals.

Source: Created by case authors based on data from company annual reports.

Exhibit 2: Selected pharmaceutical companies in a nutshell

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| --- |
| **Company** |
| **Pfizer** had been the undisputed market leader (in terms of revenue) since 2006, except for the year 2014, when Novartis was ahead. The main reason for this was the loss of exclusivity of certain blockbuster drugs, including Lipitor. After a change in leadership in 2010 (CEO Ian Read), Pfizer focused on five high-priority therapeutic areas: immunology and inflammation, oncology, cardiovascular and metabolic diseases, neuroscience and pain, and vaccines. Its core business was prescription drugs for humans. Prevnar (pneumococcal vaccine) was the top selling drug for Pfizer in 2017 with sales of $5.6 billion; Lyrica (treating pain caused by neurological diseases) was the second highest-selling drug with sales in 2017 of US$5 billion. Even though Pfizer was struggling to deliver a promising pipeline, its focus on cancers was a great success. (A company’s “drug pipeline” contained all drugs that were under discovery or development.) The breast cancer treatment Ibrance was approved by the FDA in 2015, and sales jumped sharply to $0.75 billion in 2015, $2.1 billion in 2016, and $3.1 billion in 2017; revenue in 2018 was expected to rise to $3.8 billion (indicating blockbuster status).  Pfizer was vigorous in pursuing mergers and acquisitions (M&As), pushing the company Pfizer to a global top position. In the year 2000, they closed their biggest deal when they acquired Warner-Lambart for $111.8 billion (mainly to gain control of Lipitor). In 2002, it paid $60 billion for Pharmacia. In 2009, it merged with Wyeth at a cost of $68 billion. Since then, Pfizer focused on the acquisition of companies, units, and smaller biotechs that boosted existing activities. Recent acquisitions included the vaccine division of Baxter, Hospira for $16.1 billion, Anacor for $4.9 billion, and Medivation for $14.3 billion (the biggest M&A in the pharmaceutical industry in 2016). Unlike other major players, Pfizer had not separated its company into different legal entities. |
| **Johnson & Johnson’s** achievements derived from a highly differentiated and decentralized conglomerate with three divisions: medical devices and diagnostics (35% of overall revenue in 2016), pharmaceuticals (47%), and consumer products (19%). Within the pharmaceutical division, the treatment focus was on neuroscience, immunology and infectious diseases. The consumer division encompassed over-the-counter (OTC) products, food products and supplements, skin care, and children’s products. The corporation had acquired firms for all of its business areas over the few last years. In the medical devices and diagnostics segments, Johnson & Johnson was the market leader; in pharmaceuticals, it was (with a revenue of $36.3 billion) among the five top players (see Exhibit 1). |
| The US firm **Merck & Co** (also known as MSD or Merck Sharp & Dohme) operated almost exclusively in the area of prescription drugs (89% of revenues in 2016) and covered a wide range of therapeutic areas. The remaining 11% of revenue came mainly from animal health products. Merck & Co had long been considered the largest pharmaceutical firm globally. It suffered from the premature market withdrawal in 2004 of the blockbuster Vioxx, an arthritis drug launched in 1999; Merck had made over $2.5 billion of revenue in 2003 from this drug alone. Ongoing tests had shown a heightened risk of heart attack for patients taking Vioxx, and this led to the immediate withdrawal of the license. In 2008, two important products lost patent protection, and in 2012, blockbuster Singulair’s patent expired. In 2009, Merck merged with Schering-Plough in a deal worth $41 billion, and in 2014, it acquired Cubist Pharmaceuticals. Besides this and a few other small deals, Merck & Co was conservative with respect to M&As. In October 2013, Merck announced substantial (approximately 8,500) job cuts in order to save $2.5 billion by 2015. These came on top of 7,500 earlier job cuts in 2011 and 2012. |
| **Novartis** consisted of three main divisions, and its business focus was on health care. The biggest section, with $32.8 billion of revenue, was the pharmaceuticals (innovative/branded drugs) division (67% of overall revenue in 2016). The second largest, generics production, was managed within a separate firm, Sandoz (21% of overall revenue in 2016). Thirdly, the $39.3 billion acquisition in 2010 of global eye-care leader Alcon increased the size of its eye-care division significantly (12% of overall revenue in 2016); this was now run as a separate firm. In 2015, a joint venture between Novartis OTC and GlaxoSmithKine (GSK) Consumer Healthcare was created and, as a result, OTC revenues were separated from those of Novartis. Novartis sold its entire vaccines division to GSK (revenue of $1.5 billion in 2014) in 2015. |

EXHIBIT 2 (CONTINUED)

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| --- |
| The present-day company **Sanofi** resulted from Sanofi’s acquisition of Aventis in 2004. Aventis itself was the result of an earlier merger between Hoechst and Rhône-Poulenc. Sanofi was dominated by its pharmaceuticals division (80% of revenues) and operated in a highly diversified range of therapeutic areas (e.g., diabetes, oncology, multiple sclerosis, and rare diseases). Another 13% of revenue derived from vaccines and 7% from the animal health segment. To compensate for the expiry of patents, the firm had undertaken several major deals. In 2009 it expanded into the generics market through its acquisition of Zentiva and Medley. The Medley deal turned Sanofi into the top Latin American generics drug producer. Merial, a previous joint venture with Merck & Co., was wholly acquired and became Sanofi’s animal health division in 2011. Around the same time, it also bought Genzyme, a biotech company specializing in rare diseases. About one third of Sanofi’s yearly revenue derived from drugs which were out of patent. |
| **Roche**’s pharmaceuticals division generated 77% of its total revenue; the diagnostic division contributed the rest. Roche was a market leader in the area of oncology, which was responsible for 65% of pharmaceutical sales in 2016. Immunology accounted for just 18% of revenue. Roche’s partnership with Chugai emphasized its belief in the importance of the biotechnology sector. The $46.8 billion mega-deal with Genentech in 2009 turned Roche into a top biotech company. Apart from carefully pinpointed acquisitions of innovative diagnostic and biotech firms such as Genentech and InterMune (in 2014 for $8.3 billion), Roche tended to favour organic growth. The company saw its future in innovation (in particular in biotechnology) rather than generics.  Roche’s main competitive advantage was its product pipeline, particularly biologics, which occupied top rank in terms of the value of the pipeline. Roche’s multiple sclerosis biologics drug Ocrevus was recently approved by the FDA and was ranked as the most valuable research and development project globally, with yearly sales volumes estimated at $4.1 billion. Roche’s bladder cancer biologics drug Tecentriq was approved in 2016 and was expected to become Roche’s single growth driver and one of the best selling drugs in the pharmaceutical industry by 2024. |
| **Teva** was a generics producer from Israel. It was the only non-Western company among the top 15 biggest pharmaceutical companies globally (revenue 2016: $21.9 billion, with about a half of revenue coming from generic drugs sales; see Exhibit 18). Up until 2012, all top-ten firms were research-oriented companies. This changed with the entry of Teva into the top-ten list in 2012. However, by 2016, activity by the pharmaceutical giants had moved Teva down to position 12. Teva was the only top firm that generated its revenues predominantly from generics sales and that did not start life as a traditional R&D company. Teva held the leading position in the global generics drug market (the second being Sandoz, which belonged to Novartis, with revenue of $10.1 billion in 2016). Teva had grown substantially during the last few years as a result of a number of M&As. In 2010, Teva acquired the German generics producer Ratiopharm for $5 billion, and in March 2015, Auspex Pharmaceuticals for $3.5 billion. The biggest deal occurred in 2015/16, when it acquired Actavis Generics (Allergan) for $39 billion. Teva invested in its generics business but was also willing to expand its innovative portfolio. In 2011, it acquired Cephalon, an innovative biotechnology company focusing on cancer and pain medication, for $6 billion. Teva had invested heavily in the biotech area in order to be ready to launch biosimilars when current biological drugs lost their exclusivity in the next few years. |

Note: All dollar amounts are in US$ unless otherwise specified.

Sources: Ben Adams, “Novartis Knocks Pfizer off Sales Leader Board,” PMLive, April 9, 2015, accessed May 13, 2019, www.pmlive.com/pharma\_news/novartis\_knocks\_pfizer\_off\_sales\_leader\_board\_706992; Pfizer, “Our Timeline 1846 – Present,” Pfizer, May 13, 2019, accessed May 13, 2019, www.pfizer.com/people/history; Anna Prior, “Pfizer to Buy Baxter’s Vaccines for USD $635 Million,” Market Watch, July 30, 2014, accessed May 29, 2019, www.marketwatch.com/story/pfizer-to-buy-baxters-vaccines-for-635-million-2014-07-30; Reuters, “Pfizer Has Abandoned Its Plan to Split Into Two Companies,” Fortune, September 26, 2016, accessed May 29, 2019, http://fortune.com/2016/09/26/pfizer-split-companies/; Johnson & Johnson, Annual Report 2016, March, 2017, accessed May 13, 2019, https://jnj.brightspotcdn.com/88/3f/b666368546bcab9fd520594a6016/2017-0310-ar-bookmarked.pdf; Merck & Co. Inc., Annual Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 for the Fiscal Year Ended December 31, 2016, February 28, 2017, accessed May 13, 2019, https://s21.q4cdn.com/488056881/files/doc\_financials/2017/Q4/merck-q4-10k.pdf; Barbara Sibbald, “Rofecoxib (Vioxx) Voluntarily Withdrawn from Market,” CMAJ: Canadian Medical Association Journal 171, no. 9, (2004): 1027–1028; BBC News, “Merck Cuts another 8,500 Jobs,” BBC News, October 1, 2013, accessed May 29, 2019, www.bbc.com/news/business-24356801; Novartis, Annual Report 2015, March 2016, accessed May 13, 2019, www.novartis.com/sites/www.novartis.com/files/novartis-annual-report-2015-en.pdf; Novartis, Annual Report 2016, March, 2017, accessed May 13, 2019, www.novartis.com/sites/www.novartis.com/files/novartis-annual-report-2016-en.pdf; Sanofi, “About Us: Through Time,” Sanofi, May 17, 2017, accessed May, 2017, www.sanofi.com/en/about-us/through-time; Sanofi, Annual Report 2016, March, 2017, accessed May 13, 2019, www.sanofi.com/-/media/project/one-sanofi-web/websites/global/sanofi-com/home/common/ docs/download-center/india\_annual\_report\_may\_2017.pdf/;Teva, “Our History,” Teva, May 13, 2019, accessed May 13, 2019, www.tevapharm.com/about/history/; Antoine Gara, “Teva Pharmaceuticals Stands To Lose Around $300 Million On Mylan Trade,” *Forbes*, July 27, 2015, accessed May 29, 2019, www.forbes.com/sites/antoinegara/2015/07/27/teva-pharmaceuticals-stands-to-lose-around-300-million-on-mylan-trade/#1e27a9e954 2b.

Exhibit 3: Global revenue of the pharmaceutical market from 2008–2017 [%]

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Year** | **2008** | **2009** | **2010** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** | **2017** |
| Total global sales in US$ billion | 799 | 830 | 888 | 963 | 962 | 999 | 1,043 | 1,105 | 1,149 | 1,195 |
| Yearly growth rate in % |  | 4 | 7 | 8 | 0 | 4 | 4 | 6 | 4 | 4 |

Source: BPI. (n.d.), “Revenue of the Worldwide Pharmaceutical Market from 2001 to 2017 (in billion US dollars),” Statista - The Statistics Portal, accessed May 13, 2019, www.statista.com/statistics/263102/pharmaceutical-market-worldwide-revenue-since-2001/.

Exhibit 4: change in total (private and public) health spending FROM 1970–2016  
[per capita, $, and % of GDP]

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Brazil** | | **China** | | **Germany** | | **India** | | **Japan** | | **Poland** | | **Russia** | | **UK** | | **US** | |
| **Year** | **$** | **%** | **$** | **%** | **$** | **%** | **$** | **%** | **$** | **%** | **$** | **%** | **$** | **%** | **$** | **%** | **$** | **%** |
| 1970 |  |  |  |  | 258 | 5.7 |  |  | 141 | 4.4 |  |  |  |  | 148 | 4.0 | 327 | 6.2 |
| 1980 |  |  |  |  | 941 | 8.1 |  |  | 545 | 6.4 |  |  |  |  | 447 | 5.1 | 1,036 | 8.2 |
| 1990 |  |  |  |  | 1,722 | 8.0 |  |  | 1,117 | 5.8 | 265 | 4.3 |  |  | 888 | 5.1 | 2,700 | 11.3 |
| 2000 | 642 | 7.0 |  |  | 2,613 | 9.8 | 85 | 4.3 | 1,915 | 7.4 | 562 | 5.3 | 370 | 5.4 | 1,719 | 6.3 | 4,559 | 12.5 |
| 2010 | 868 | 6.1 |  |  | 4,359 | 11.0 | 187 | 4.3 | 3,205 | 9.5 | 1,341 | 6.4 | 1,405 | 6.8 | 3,036 | 8.5 | 7,929 | 16.4 |
| 2015 |  |  |  |  | 5,267 | 11.1 |  |  | 4,150 | 11.2 | 1,677 | 6.3 |  |  | 4,003 | 9.8 | 9,451 | 16.9 |
| 2016 | 995 | 6.2 | 733 | 5.5 | 5,551 | 11.3 | 269 | 4.8 | 4,519 | 10.9 | 1,798 | 6.4 | 1,351 | 5.6 | 4,192 | 9.7 | 9,892 | 17.2 |

Source: Created by case authors based on data from OECD Data, “Health Spending,” OECD, accessed May 13, 2019, https://data.oecd.org/healthres/health-spending.htm.

Note: Empty cells = no data available.

Exhibit 5: pharmaceutical product Expenditure for selected countries

[per capita, US$, and % of GDP]

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Germany** | | **Japan** | | **Poland** | | **Sweden** | | **UK** | | **US** | |
| **Year** | **$** | **%** | **$** | **%** | **$** | **%** | **$** | **%** | **$** | **%** | **$** | **%** |
| 1970 | 44 | 1.0 |  |  |  |  | 20 | 0.4 | 23 | 0.6 | 43 | 0.8 |
| 1980 | 131 | 1.1 | 115 | 1.3 |  |  | 60 | 0.5 | 60 | 0.7 | 96 | 0.8 |
| 1990 | 253 | 1.2 | 239 | 1.2 |  |  | 126 | 0.6 | 129 | 0.7 | 251 | 1.0 |
| 2000 | 367 | 1.4 | 352 | 1.4 |  |  | 316 | 1.1 |  |  | 541 | 1.5 |
| 2010 | 655 | 1.7 | 656 | 1.9 | 326 | 1.6 | 471 | 1.1 |  |  | 984 | 2.0 |
| 2017 | 766 | 1.6 | 798 | 2.2 | 352 | 1.4 | 479 | 1.1 | 497 | 1.1 | 1,162 | 2.0 |

Source: Created by case authors based on data from OECD Data, “Pharmaceutical Spending,” OECD, accessed May 13, 2019, https://data.oecd.org/healthres/pharmaceutical-spending.htm#indicator-chart.

Exhibit 6: percentage of elderly people (65+ and 80+) in the total population, 2010 and 2050

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Country** | **65+** | | **80+** | |
| **2010 (%)** | **2050 (%)** | **2010 (%)** | **2050 (%)** |
| Brazil | 7 | 23 | 1 | 6 |
| Germany | 21 | 33 | 5 | 15 |
| India | 5 | 13 | 1 | 2 |
| Japan | 23 | 39 | 6 | 16 |
| Poland | 13 | 30 | 3 | 10 |
| Russia | 13 | 21 | 3 | 6 |
| Sweden | 18 | 24 | 5 | 9 |
| UK | 16 | 24 | 4 | 10 |
| US | 13 | 21 | 4 | 8 |

Source: Created by case authors based on data from OECD Data, “Elderly Population,” OECD, accessed May 13, 2019, https://data.oecd.org/pop/elderly-population.htm*.*

exhibit 7: Number of New Molecular Entities (NMEs) and   
Biologics approved by the US FDA, 2008–2017 [count]

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Year** | **2008** | **2009** | **2010** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** | **2017** |
| **FDA Approval** | **24** | **26** | **21** | **30** | **39** | **27** | **41** | **45** | **22** | **46** |
| NMEs | 21 | 20 | 15 | 24 | 33 | 25 | 30 | 33 | 15 | 34 |
| Biologics | 3 | 6 | 6 | 6 | 6 | 2 | 11 | 12 | 7 | 12 |

Source: Asher Mullard, “2018 FDA drug approvals,” Nature Reviews, January 15, 2019, accessed May 13, 2019, www.nature.com/articles/d41573-019-00014-x.

exhibit 8: Forecast: Pharmaceutical market growth for selected regions, 2015–2020 [%]

|  |  |
| --- | --- |
| **Region** | **%** |
| Africa | 8.1 |
| CIS\* | 6.7 |
| EU | 3.2 |
| India | 12.1 |
| Japan | 0.6 |
| Latin America | 2.3 |
| Middle East | 6.6 |
| North America | 7.0 |
| Southeast & East Asia | 6.5 |

Note: \*The Commonwealth of Independent States (CIS), also called the Russian Commonwealth, consisted of nine member states and two associate states, made up of the 15 former Soviet countries.

Source: “Projected Global Pharmaceutical Market Growth between 2016 and 2021, by Region\*,” Statista – The Statistics Portal, accessed May 13, 2019, www.statista.com/statistics/299702/world-pharmaceutical-market-growth-by-region-forecast/.

Exhibit 9: Expenditure on pharmaceuticals comparing prescribed and OTC Drugs, 2017 [per capita, US$, and % of GDP]

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Country** | **Prescribed Drugs** | | **OTC Drugs** | | **Total** |
| **$ per capita** | **% of total** | **$ per capita** | **% of total** |  |
| Australia | 427 | 69 | 190 | 31 | 617 |
| Canada | 685 | 91 | 71 | 9 | 756 |
| France | 553 | 87 | 84 | 13 | 637 |
| Germany | 686 | 90 | 80 | 10 | 766 |
| Japan | 685 | 86 | 113 | 14 | 798 |
| Poland | 171 | 49 | 181 | 51 | 352 |
| Spain | 366 | 66 | 184 | 34 | 550 |
| Sweden | 351 | 73 | 128 | 27 | 479 |
| US | 1,011 | 87 | 151 | 13 | 1,162 |

Source: OECD, *Health at a Glance 2017: OECD Indicators* (Paris: OECD Publishing, 2017), accessed May 13, 2019, doi.org/10.1787/health\_glance-2017-en.

Exhibit 10: Pharmaceutical R&D spending, global prescription drugs sales and predicted spending and sales for the time period 2017–2020 [US$ bn]

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Year** | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
| R&D spending | 137 | 136 | 138 | 144 | 149 | 159 | 165 | 172 | 177 | 183 |
| Sales innovative drugs | 667 | 653 | 657 | 675 | 666 | 688 | 708 | 746 | 782 | 832 |
| Sales generics | 66 | 67 | 70 | 76 | 78 | 81 | 84 | 89 | 95 | 100 |

Source: Evaluate, “World Preview 2016, Outlook to 2022,” Evaluate Group, September 2016, accessed May 13, 2019, <http://info.evaluategroup.com/rs/607-YGS-364/images/wp16.pdf>.

Exhibit 11: R&D and prescription sales expenditure of the top 15 pharmaceutical companies, 2017 [US$ bn]

|  |  |  |
| --- | --- | --- |
| **Company** | **Prescription Sales Expenditures** | **R&D Expenditures** |
| Pfizer (US) | 45.36 | 7.63 |
| Novartis (Switzerland) | 41.88 | 7.82 |
| Roche (Switzerland) | 41.73 | 9.18 |
| Merck & Co. (US) | 35.36 | 7.56 |
| Sanofi (France) | 34.40 | 8.36 |
| Johnson & Johnson (US) | 34.08 | 6.18 |
| Gilead Sciences (US) | 28.67 | 4.98 |
| GlaxoSmithKline (UK) | 27.74 | 4.83 |
| AbbVie (US) | 25.66 | 3.52 |
| Amgen (US.) | 21.80 | 3.48 |
| AstraZeneca (UK) | 19.78 | 5.41 |
| Allergan (US) | 19.26 | 4.82 |
| Teva (Israel) | 18.53 | 4.97 |
| Bristol-Myers Squibb (US) | 18.26 | 1.85 |
| Eli Lilly (US) | 17.72 | 3.26 |

Source: “Top 50 Global Pharmaceutical Companies by Prescription Sales and R&D Spending in 2017 (in billion US dollars),” Statista - The Statistics Portal, accessed May 13, 2019, www.statista.com/statistics/273029/top-10-pharmaceutical-companies-sales-and-rundd-spending-in-2010/.

Exhibit 12: Ranking of industrial sectors by overall R&D spending, 2015 [%]

|  |  |
| --- | --- |
| **Industry** | **R&D Spending in % of Net Sales** |
| **Pharmaceuticals and biotechnology** | **15.0** |
| Software and computer services | 10.6 |
| Technology hardware and equipment | 8.4 |
| Automobiles and parts | 5.9 |
| Electronic & electrical equipment | 4.7 |
| Healthcare equipment and services | 4.3 |
| General industrials | 4.3 |
| **Total 41 industries (average)** | **3.8** |
| Industrial engineering | 3.6 |
| Leisure goods | 3.2 |
| Chemicals | 2.9 |

Note: R&D = research and development.

Source: EFPIA, “The Pharmaceutical Industry in Figures,” page 10, 2018, European Federation of Pharmaceutical Industries and Associations, accessed May 13, 2019, https://efpia.eu/media/361960/efpia-pharmafigures2018\_v07-hq.pdf.

Exhibit 13: Pharmaceutical R&D spending by region, 1990–2015 [National currencies]

Note: In national currencies: Europe= euro; United States = USD Japan = JPY\*100; R&D = research and development.

Source: EFPIA, “The Pharmaceutical Industry in Figures,” page 5, 2018, European Federation of Pharmaceutical Industries and Associations, accessed May 13, 2019, https://efpia.eu/media/361960/efpia-pharmafigures2018\_v07-hq.pdf.

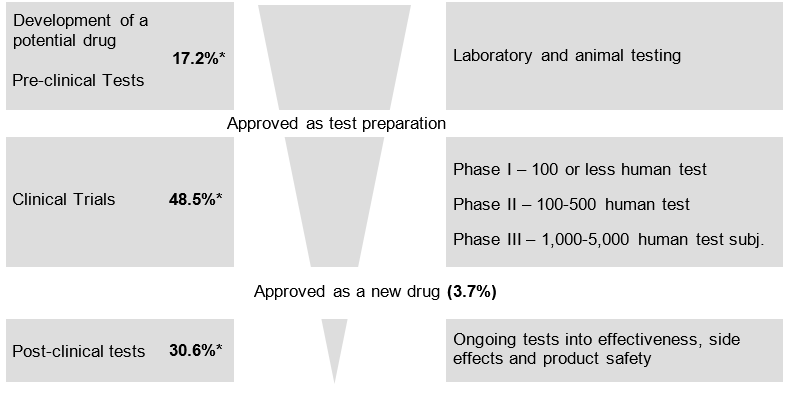
Exhibit 14: Duration of R&D and Patent Approval Phases   
[in number of years per time period]

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Time Period** | **Pre-clinical Test Phase** | **Clinical Test Phase** | **Patent Approval Phase** | **Sum** |
| 1963–1969 | 2.6 | 3.1 | 2.4 | 8.1 |
| 1970–1979 | 2.4 | 7.1 | 2.1 | 11.6 |
| 1980–1989 | 2.3 | 9.0 | 2.8 | 14.1 |
| 1990–1999 | 3.8 | 8.6 | 1.8 | 14.2 |
| 2016 | 3.5 | 6.0 | 2.5 | 12.0 |

Note: The 2016 slightly shorter development times as compared to the 1980s and 1990s were due mainly to faster patent approvals; R&D = research and development.

Source: Joseph A. DiMasi, Henry G. Grabowski and Ronald W. Hansen “Innovation in the Pharmaceutical Industry: New Estimates of R&D Costs,” *Journal of Health Economics*, 47, (2016): 20–33; and Joseph A DiMasi, “New Drug Development in the United States from 1963 to 1999,” *Clinical Pharmacology & Therapeutics* 69, no. 5, (2001): 286–296.

Exhibit 15: Broad Overview of the R&D Process



Note: \*Allocation of R&D investments across the process in %; R&D = research and development.

Source: Authors’ illustration based on EFPIA, “The Pharmaceutical Industry in Figures,” page 8, 2018, European Federation of Pharmaceutical Industries and Associations, accessed May 13, 2019, https://efpia.eu/media/361960/efpia-pharmafigures2018\_v07-hq.pdf.; PhRMA, “Biopharmaceutical Research & Development: The Process Behind New Medicines,” PhRMA, May 2015, assessed May 13, 2019, http://phrma-docs.phrma.org/sites/default/files/pdf/rd\_brochure\_022307.pdf.

Exhibit 16: Top 10 Blockbuster branded drugs by revenue, 2017 [us$ billion]

|  |  |  |  |
| --- | --- | --- | --- |
| **Product** | **Company** | **Therapeutic Area** | **Revenue 2017** |
| Humira | AbbVie | Rheumatism | 18.4 |
| Eliquis | Bristol-Myers Squibb and Pfizer |  | 7.4 |
| Revlimid | Celgene | Blood related disorders | 8.2 |
| Opdivo | Bristol-Myers Squibb and Ono Pharmaceutical | Oncology | 5.8 |
| Keytruda | Merck & Co | Oncology | 3.8 |
| Enbrel | Amgen/Pfizer (Wyeth) | Rheumatism | 7.9 |
| Herceptin | Roche | Oncology | 7.0 |
| Avastin | Roche | Oncology | 6.7 |
| Rituxan/Mabthera | Roche | Rheumatism | 7.3 |
| Xarelto | Bayer and Johnson&Johnson | Thrombosis | 6.2 |

Source: Alex Philippidis, “Top 15 Best-Selling Drugs of 2018,” Geneng News, March 11, 2019, accessed July 26, 2019, www.genengnews.com/a-lists/top-15-best-selling-drugs-of-2018/.

Exhibit 17: total revenue of the top three Selling Drugs, 2017 [%]

|  |  |
| --- | --- |
| **Company** | **Share of Revenue (%)** |
| AbbVie | 79 |
| Amgen | 53 |
| Gilead Sciences | 43 |
| GlaxoSmithKline | 41 |
| Roche | 40 |
| Johnson & Johnson | 36 |
| Merck & Co. | 34 |
| Sanofi | 26 |
| Pfizer | 25 |
| Novartis | 15 |

Note: The table presents the share of the three top-selling drugs of a company in relation to the overall revenue of each company.

Source: IgeaHub/Statista "Revenue share from major pharmaceutical companies' top 3 products in 2017," Statista, March 6, 2018, accessed July 26, 2019, www.statista.com/statistics/272839/revenue-from-top-products-of-selected-pharmaceu tical-companies/.

Exhibit 18: Public and private spending on Drugs in selected countries, 2013 [in % of total spending on pharmaceuticals]

|  |  |  |
| --- | --- | --- |
|  | **Public (%)** | **Private (%)** |
| Chile\* | 90.0 | 10.0 |
| Germany | 76.7 | 23.3 |
| Japan | 82.1 | 17.9 |
| Poland | 71.2 | 28.8 |
| Sweden | 81.5 | 18.5 |
| United Kingdom | 83.5 | 16.5 |
| United States | 47.6 | 52.4 |
| ***OECD-29\*\**** | ***58.0*** | ***42.0*** |

Note: \*Highest public share of pharmaceutical spending (OECD-29 countries); \*\*Weighted average: OECD-29 value included all other countries mentioned in the exhibit.

Source: Created by case authors based on data from OECD Data, “Pharmaceutical Spending,” OECD, accessed May 13, 2019, https://data.oecd.org/healthres/pharmaceutical-spending.htm#indicator-chart.

Exhibit 18: Revenues of the generics drugs segment of TOP 10 generics producers, 2016 [$ BN]

|  |  |  |
| --- | --- | --- |
| **Company Name** | **Country of Origin** | **Revenue “Generic Drugs” Segment ($ billion)** |
| Teva | Israel | 9.9 |
| Mylan | Netherlands | 9.4 |
| Sandoz (belongs to Novartis) | Germany (Switzerland) | 9.0 |
| Hospira (belongs to Pfizer) | United States | 4.6 |
| Allergan | Ireland | 4.5 |
| Sun Pharmaceutical | India | 3.6 |
| Fresenius Kabi | Germany | 2.8 |
| Endo International (affiliated with DuPont Merck Pharmaceutical Company) | Ireland | 2.6 |
| Lupin | India | 2.5 |
| Zentiva (belongs to Sanofi) | France | 2.0 |
| Aspen Pharmacare | South Africa | 2.0 |
| Aurobindo Pharma | India | 1.9 |

Source: Eric Sagonowsky, “The top 15 generic drugmakers by 2016 revenue,” FiercePharma, May 16, 2017, accessed May 13, 2019, www.fiercepharma.com/special-report/top-15-generic-drugmakers-2016.

ENDNOTES

1. This case has been written on the basis of published sources only. Consequently, the interpretation and perspectives presented in this case are not necessarily those of Pfizer Inc. or any of its employees. [↑](#endnote-ref-1)
2. Donald J. Trump (@realDonaldTrump), “Pfizer & others should be ashamed that they have raised drug prices for no reason,” Twitter, July 9, 2018, accessed May 13, 2019, https://twitter.com/realdonaldtrump/status/1016368503723577344?lang=en. [↑](#endnote-ref-2)
3. $ = USD; all dollar amounts are in US$ unless otherwise specified. [↑](#endnote-ref-3)
4. The Economist, “FDA Wants to Help Unproductive Drug Makers*,*” *Economist*, March 22, 2018, accessed May 28, 2019, www.economist.com/business/2018/03/22/fda-wants-to-help-unproductive-drugmakers*.* [↑](#endnote-ref-4)
5. Ian Bremmer, “The New Rules of Globalization” *Harvard Business Review*, January 2014, 103–107. Available from Ivey Publishing, product no. R1401J. [↑](#endnote-ref-5)
6. OECD, “Health at a Glance 2017: OECD Indicators,” *OECD*, November 10, 2017, accessed May 13, 2019, www.oecd.org/health/health-systems/health-at-a-glance-19991312.htm; Health expenses included expenses for pharmaceuticals, inpatient care, outpatient care, long-term care, and collective services. The 16 per cent of pharmaceutical spending did *not* account for spending on pharmaceuticals in hospitals. [↑](#endnote-ref-6)
7. The terms “pharmaceuticals,” “pharmaceutical products,” and “drugs” are used interchangeably. [↑](#endnote-ref-7)
8. Ralf Otto, Alberto Santagostino, and Ulf Schrader, “Rapid Growth in Biopharma: Challenges and Opportunities,” *McKinsey Quarterly*, December 2014, accessed May 13, 2019, www.mckinsey.com/industries/pharmaceuticals-and-medical-products/our-insights/rapid-growth-in-biopharma. [↑](#endnote-ref-8)
9. The Economist, “A Digital Revolution in Health Care is Speeding Up,” *Economist*, March 2, 2017, accessed May 28, 2019, www.economist.com/business/2017/03/02/a-digital-revolution-in-health-care-is-speeding-up. [↑](#endnote-ref-9)
10. Amit Agarwal, Julio Dreszer, and Jean Mina, “What’s Next for Pharma in Emerging Markets?,” *McKinsey Quarterly*, June 2017, accessed May 13, 2019, www.mckinsey.com/industries/pharmaceuticals-and-medical-products/our-insights/whats-next-for-pharma-in-emerging-markets. [↑](#endnote-ref-10)
11. The OTC market was comparable to the consumer goods market and was often presented as such in the annual reports and financial statements of pharmaceutical firms. [↑](#endnote-ref-11)
12. Within-patent competition was erosion of innovative pharmaceutical companies’ returns by generic competition after patent expiry; Between-patent competition was the result of active competitive forces during the life of a patent, which allowed competitors to offer similar products under different patents. [↑](#endnote-ref-12)
13. The Economist, “Going Large,” *Economist*, December 30, 2014, accessed May 28, 2019, www.economist.com/business/2014/12/30/going-large; and Otto, Santagostino, and Schrader, op. cit. [↑](#endnote-ref-13)
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