Licensing agreements in the pharmaceutical industry

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Abstract This paper studies the licensing process, the mode of cooperation that is most frequently encountered in the pharmaceutical sector. Within the framework of a licensing agreement, the 'donor' transfers an innovation, a 'brand' and sometimes the raw material while the 'beneficiary' is committed to the payment of royalties[1] and other forms of payments (fee upon signing, annual fee...) that may also involve profit sharing over the product lifecycle. This study however, will be limited to an examination of two particular cases of licensing that involve agreements of co-promotion and co-marketing between pharmaceutical firms, which result in the constitution of fairly stable networks and provide both cost and competitive advantages. It has published in part in *Direction & Gestion*.

REASONS FOR PARTNERING

As more and more progress in the pharmaceutical sector occurs by a combination of different technologies,[2–4] a phenomenon that dates back to the early 1930s (chemistry, electric equipment...),[5] the growth of agreements[6,7] implying activities of research and development has been strong. Indeed during these last years, radical innovations have provoked major discontinuities that, in numerous cases, have opened the way to new applications for already existing products and to the creation of more successful ones. They also ended in the implementation of substitutive technologies, for instance the drug design technique (and others, such as proteomics, genomics, gene therapy or bioinformatics), called to substitute itself or to complete the more classic research methods used until now. Consequently, research perspectives became more numerous, but also more expensive,[8] which prevented many companies from bearing all of them. Besides, the complexity and the intensity of research activities have increased.[9] Since few drug manufacturing companies master these new research techniques, they are required to get access to them[10] through alliances with other companies (drug manufacturing firms, biotech companies). In some cases, partners may come from a complementary sector or industry (for instance, chemical industry).[11] Finally, the extension of the field of application of certain preventive treatments (combination vaccines) had also sparked alliances. For instance, in the field of vaccines, Merck and Pasteur Mérieux Connaught (Pasteur) established (1994) a 50 per cent owned joint venture to develop and market combination vaccines, which, in a single injection, would immunise patients, and in particular children, against a larger number of diseases.

Another way of analysing the development of the agreements in R&D

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consists of advancing the increasing uncertainty in the competitive environment of the drug manufacturing companies:[12,13] in front of very unstable conditions of the competition, the reactions of laboratories must be flexible, resource-saving and quick.[14] Several elements make the agreements the most flexible mode of development: first, they do not inevitably imply capital movements. For instance, two joint ventures created in 1991 within the framework of the alliance, Sanofi Winthrop grouped together the technical and commercial means of both laboratories in two different geographic areas, the USA and Europe. The two companies' capitals were crossed so that no laboratory had to release capital. These agreements can also take multiple forms (simple license, co-marketing, co-development) that can be combined (a license agreement that can allow exclusivity for some period of time and be followed by a period of co-promotion or co-marketing).[15] The laboratory has the possibility of putting an end to the agreement if it proves to be less profitable than foreseen. Compared to the situation of a laboratory that would have invested a lot in a geographic or therapeutic market, the sunk costs are divided between partners alliances (partial integration) are easier to dissolve and, for each partner, sunk costs are generally less than those which would be incurred by an acquisition (total integration) or the creation of a new company in the targeted market.[16] Finally, as they are quicker to implement than an acquisition, they allow a fast introduction of a pharmaceutical drug, which facilitates the pre-emption of the market. Risks of seeing another product leading the market are therefore reduced.

A development agreement can also contribute to forge a market power[17] resulting from the subjective differentiation of the product[18,19]: first of all, through a cross-border development, a laboratory can benefit from a certain reputation or image resulting from a collaboration with its partner. The agreement can lead it to tie up contacts with key opinion leaders of the country where the marketing of the product is envisaged. Indeed, although medicines are sold by pharmacists and consumed by the patients, the doctor rules the market. Because he/she is the one who prescribes, the demand hinges on his/her convictions and prescription patterns, especially in areas where managed care has not taken over the market. The latter is in front of a plethora of drugs that are more or less effective, safe or new. Given that it is impossible to know them all, he/she is going to have to inquire to make a judgment of the therapeutic value of any of these products. To do that, he/she can either trust his/her colleagues' experience, rely on his education or, most often, if he is in a solo practice and not linked to a hospital, turn to other sources of medical information, which would include various promotions. So it is on the medical profession that the various pharmaceutical companies are going to concentrate their efforts in order to influence demand in their favour. For example, the license agreement between Merck & Co and Astra AB allowed the second to benefit from a certain recognition due to its seniority in the market and to the fame of its partner. Merck & Co was indeed one of the oldest American laboratories, and its research activity was largely praised.

Certain alliances can be compared with prenuptial agreements before a marriage: these are agreements that, originally, were limited to a simple license operation and that subsequently evolved in a more structured cooperation, for instance a joint venture (a joint venture as a mode of entry is more profitable than a licensing agreement)[20] and finally an acquisition.[21] The drug manufacturing company can wait until a more favourable situation

appears, identify the narrower set of technological possibilities that satisfies its needs and ponder the merits of its strategic decision, before taking a bolder decision, for instance by acquiring the participation of its partner. The co-promotion agreement signed as early as 1982 between Merck & Co and Astra AB supplies the illustration: originally, the Swedish laboratory had entrusted the development and the marketing of all its new medicines in the USA to Merck & Co that, at that time, dominated the pharmaceutical industry. In a second stage, this agreement foresaw the creation of an autonomous joint firm, Astra Merck Inc, the capital of which would be shared at the level of 50 per cent by both partners, should sales on the American territory of Astra AB products reach a certain level. Due to the success met by Astra products with the American clientele and in particular with the Losec, the sales of which exceeded US$1 billion, this transformation was made possible in 1994. The Swedish laboratory then stopped collecting royalties. The profits of the common baptised company Astra Merck Inc were then equally shared with Merck & Co. This joint venture benefits from an option on the new products stemming from Astra's research, with the exception of certain products intended for the hospital sector and for which Astra AB already has an independent subsidiary on American territory (Astra USA). Similar facts can be also observed in Asia, where relatively simple license agreements (no joint ventures were formed) between Western and Asian laboratories could be observed at the end of the 1980s agreements, which gradually changed into real interfirm cooperations marked by the then creation of joint ventures.

An agreement with a local firm can overcome institutional barriers[22,23] because this generally benefits from good relations with the medical authorities, which can be used by the laboratory to facilitate the approval of health authorities to launch the drug in the aimed geographic zone.[24] It is one of the reasons that led the Swedish Gambro AB to join with the Japanese Shimizu Pharmaceutical Co Ltd, to market dialysis products in the Japanese market. In Japan, Fluvoxamine Maleate was also co-developed by Solvay Meiji Yakuhin KK and Meiji Seika Kaisha, Ltd. In March 1996, both made a joint submission, to the Ministry of Health and Welfare, with an application for registration of fluvoxamine. Barriers to entry however, never disappear totally: a certain number of limitations may be imposed on the laboratory by the hosting country, for example, the sharing of the property of the capital of the joint venture with a local company in return for an access to research centres or hospitals for clinical trials.

LICENSING AGREEMENTS

Definition

There are various definitions of licensing agreements, and some of them are quite explicit about its advantages: 'under a licensing agreement, the licensing firm grants rights to another firm in the host country to produce and/or sell a product. The licensee pays compensation to the licensing firm in return for technical expertise'.[25] According to the NIH,[26] a license 'is a contract between the owner(s) of the subject matter of the license and one or more parties that seeks the right to make, use, sell, or import the subject matter of the license'. And according to Pearce and Robinson (2000),[27] they are recommended for 'companies that want to venture beyond exporting but are not ready for an equity position abroad', or for firms that display a combination of global activities. They are also able to avoid tariffs or import quotas.[28] Not surprisingly, in this sector, licensing agreements are frequent and, assuming that the buyer has

the expertise and that the technology is sufficiently developed, the buyer knows what he buys, which makes it the surest mode of access to innovation. Also, they enable the licensor to gain much-needed capital and they are often immediately exploitable (in case commercial exploitation is not immediate, the alliance is limited to an early stage of technology).

Before the negotiation of royalties (royalties range from 5 to 10 per cent on average, sometimes up to 25 per cent if the product's development is advanced), partners should focus on property rights (formula, know-how, intellectual property rights), uses of the product (manufacture, use in a manufacturing process, sub-license), geographic coverage and indications (for instance, veterinary use as opposed to human use). Other issues, such as the exclusivity (unlike in Europe, in the USA a patented technology co-owned by more than two parties can be licensed by one of the parties without the other owner's knowledge or consent), restrictions (the agreement must be specific enough to exclude certain potential applications that the licensor want to keep for himself) and antitrust concerns, should be addressed. Furthermore, one should not forget the adoption of a clause to exit the license (after a period of advanced notice, usually a few months) and a specific scheme to share the costs needed to enforce and defend the patent. In return, the amount of money paid to the licensor may consist of a fee upon signing, an annual fee based on market size and revenue potential (either paid on a per unit basis or on sales value) or an equity investment. The selection of the partner is not only based on the size of its sales forces, other criteria are taken into account: experience in the therapeutic field, degree of internationalisation in order to rapidly capture a global market share, commitment to pursue clinical tests for other potential therapeutic indication, and so on.

Classification of drug manufacturing companies

The following classification brings a typology of the drug manufacturing companies, which is a function of the number of new products in developments that were acquired through licensing agreements. Three major categories can be mentioned:

- Drug manufacturing companies that are 'development-oriented' as they have acquired a significant number of new products from outside entities. For this group, mainly composed of American companies (Schering-Plough, Johnson & Johnson, American Home Products, Bristol-Myers Squibb Co, Abbott), the number of products acquired under license was equal or superior to half of the products that constituted their pipeline.
- The manufacturing company with a well-balanced portfolio. For the latter, the percentage of new products under license is close to the average of the sample (that is 41.6 per cent). Among these are mostly European drug manufacturing companies (Aventis, Roche, Novartis, GlaxoSmithKline).
- Finally, the typology displays a group of drug manufacturing companies, which can be qualified as 'research-oriented', as these only have a small number of products under license in their portfolio. They appeal less often to licensing agreements to enrich their portfolio of products under development. Most of them are European (Boehringer Ingelheim, Novo Nordisk, Schering AG), followed by US (Merck & Co) and Japanese (Yamamouchi) companies (see Table 1).

TYPOLOGY AND MODALITIES OF MANAGEMENT OF CO-PROMOTION AND CO-MARKETING AGREEMENTS

Within these agreements, several motivations, some concerning advantages of cost and others of more general strategic reach, can be distinguished. If one or the

Table 1 Ranking of 19 pipelines (number of products under development)

Drug manufacturer	Pipeline (1999)	Rank	Products under license (% of licensed products in the pipeline)	In house products
Schering-Plough	58	18	37 (63.8%)	21 (36.2%)
Johnson & Johnson	73	11	43 (58.9%)	30 (41.9%)
American Home Products	93	5	50 (53.8%)	43 (46.2%)
Bristol-Myers Squibb	68	14	36 (52.9%)	32 (47.1%)
Abbott	72	12	36 (50.0%)	36 (50%)
Eli Lilly	74	9	35 (47.3%)	39 (52.7%)
Aventis	148	2	69 (46.6%)	79 (53.4%)
Pharmacia & Upjohn	80	8	37 (46.3%)	43 (53.7%)
Pfizer	146	3	65 (45.4%)	81 (54.4%)
Roche	122	4	55 (45.1%)	67 (54.9%)
Novartis	89	7	36 (40.4%)	53 (59.6%)
GlaxoSmithKline	206	1	80 (38.8%)	126 (61.2%)
Yamamouchi	59	17	22 (37.3%)	37 (62.7%)
Schering AG	67	15	23 (34.3%)	44 (65.7%)
Novo Nordisk	53	19	17 (32.1%)	36 (67.9%)
Boehringer Ingelheim	68	13	20 (29.4%)	48 (70.6%)
Merck & Co	89	6	25 (28.1%)	64 (71.9%)
Bayer	59	16	16 (27.1%)	43 (72.9%)
NIH	73	10	4 (5.5%)	69 (94.5%)
Total	1697		706 (41.6%)	991 (58.4%)

AstraZeneca was excluded as figures were not available.
Rank is based on the size of the pipeline.
For drug manufacturing firms that merged in 2000 or 2001, figures were based on data before the merger (except for Pharmacia & Upjohn).
Source:[30] *Hamdouch, A. and Depret, M. H. La nouvelle economie industrielle de la pharmacie. Structures industrielles, dynamique d'innovation et strategies commerciales. Elsevier. Biocampus collection, 2001.*

other of these advantages prevails in accordance with the form of the agreement and the end result targeted by the partners, the motives are frequently present whatever the nature of the agreement. An important difference must be noted between the licensing agreements and the agreements of co-promotion and co-marketing:[29] the classic licensing agreements mostly have a character of exclusivity in a given country. On the other hand, the agreements of co-promotion and co-marketing are not exclusive, by definition, because the product is marketed by at least two entities in one specific geographic area.

The agreements of 'co-promotion'

Within the framework of a co-promotion agreement, two pharmaceutical firms (one, the holder of an exploitation license for a substance acquired from another laboratory, the other, usually the creator of the drug) launch on the market a single product, under the same brand, with the same price, and a single marketing strategy. It consists in joining two or more companies to provide products to the end-customer or influencer (a prescriber, such as a general physician, a specialist or a pharmacist). Mostly, the product is manufactured by one of the partners and marketed by two or more companies. In most cases, two or more companies join together to market each other's products.[30] In that case, the partner, like a service provider, brings a supplementary sales force. The launch of a common offer to the allies suppresses any possibility of competition between them. It is thus clearly an additive alliance.[31]

Mostly, these agreements are formed with a clear objective with respect to size:[32] the conjunction of R&D efforts within the same entity allows financial costs to be borne, that are too high for a

single laboratory. The savings limit the investment, particularly when a partner has already solved an outstanding research problem. An organisation, a process of R&D, or a method of marketing that fits the partner's needs is then adopted. In certain cases, the commercial development requires an investment too high to be raised by a single drug manufacturing company, even if the latter is sufficiently large to develop the product alone. While clinical trials can be outsourced to a Contract Research Organisation (CRO), many biotech firms that cannot outsource marketing activities will contract with major pharmaceutical firms to ensure successful access to patients. Indeed, because the market share of a laboratory is often, but not always (see for instance specialised products for cancer, HIV etc.), related to the number of medical representatives, the marketing of pharmaceutical products targeted to large numbers of physicians requires the creation of an additional sales network. The high costs engendered by the constitution of the network however, clearly make a partnership appealing because it reduces risk, rather than investments (the partner often ends up spending more money on the marketing of the considered product than they would have done individually). Regarding the commercial plan, the addition of new products in the same network, shared with a partner, generate only marginal additional costs.

In most cases, the pooling of sales forces concerns a territory onto which the sales network of the creator of the concerned drug is weakly implanted, mostly because of the size of the network, or because of the uncertainties of the aimed market. Since 1995, the mid-sized company UCB Pharma (Union Chimique Belge) has allowed Pfizer Inc to co-promote the allergy drug Zyrtec in the USA, while different pharmaceutical companies co-promote the same product in Japan and other international markets. Another illustration is the agreement concluded between Wellcome laboratories and the Upjohn Company[33] to maximise the US sales of Wellcome's Zovirax. The agreement indeed established a pooling of the respective sales networks of both companies. The agreement between Abbott Laboratories and Boehringer Ingelheim Ltd for the Flomax (in North America), Roche and AstraZeneca Pharmaceuticals (Novaldex, in the USA), and Merck & Co and Novartis Pharmaceutical Corporation (Starlix, Europe, Africa, South East Asia, South America) also illustrate that point. Finally, by stabilising the expense of distribution and marketing, the associated laboratories were also able to create supplementary resources to finance research and development activities. On the other hand, agreements involving co-marketing are inappropriate for niche products, or when the sales potential is insufficient to justify the integration of two distribution companies.

The agreements of 'co-marketing'

Laboratories can also use a technique called co-marketing to guarantee the distribution of their products. Within the framework of a co-marketing agreement, two (or more) pharmaceutical laboratories launch the same medicine (the same formula, galenic form, the same dose, the same administrative file) in the market, but under two different commercial names. The co-marketing agreements thus associate collaborating laboratories while letting competition remain on the final products. Therefore, these alliances are practically invisible to the market, because the allies remain rivals. The patient and the doctor may be ignorant of the fact that it is the same product that is being marketed under two different brand names. However, the Managed Care revolution has made that advantage more difficult to

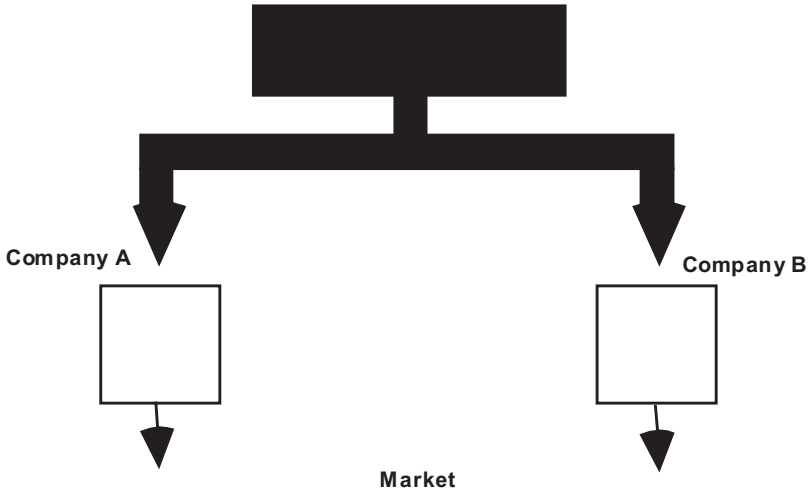

Figure 1 Co-integration alliance
Source: Dussage, P. and Garette, B., 1995.

acquire, as large Managed Care Organisations have enough experience to overcome that hurdle and select, mainly on the basis of price, the drug they want to include in their formulary. This is why the agreements of co-marketing can be considered pre-competitive. According to the terminology of Dussauge and Garrette (1995),[34] they fall into the category of alliances of co-integration or joint integration (Figure 1): the alliance concerns the upward stage of the activity of the allies, the stage for which the critical size is superior to that of each laboratory taken individually. In the eyes of the market however, every laboratory has a different product.

Agreements of co-marketing have essentially been developed since 1980, most notably in young markets, and for products with high prices and a great potential for growth.[35] Among the agreements intended to bring to the forefront products within highly competitive markets, one can quote Captopril which in France can be prescribed under two different commercial names (Lopril and Captolane); Zocor (Simvastatin) from MSD was sold in France by Elf Sanofi under the name of Lodalès and by Boehringer Ingelheim Ltd under the name of Denan; and Isoptin of BASF Pharma marketed by Searle & Co under the name of Calan. Another illustration is Septrin and Bactrim, co-marketed in various countries by GlaxoWellcome PLC and Roche.

AGREEMENTS AND CONSTITUTION OF COMPETITIVE ADVANTAGES

The objective of commercial alliances between laboratories can include the exploitation of cost advantages and the constitution and the exploitation of competitive advantages *vis-à-vis* industry rivals.[36,37] These alliances provide an answer to concerns of a strategic nature. Specifically, they can reflect the desire to:

- strengthen the market power of the actors, which can be regarded as a collusive behaviour. The alliance is perceived as a

means to raise entry or exit barriers,[38–41] sometimes against rival groups of firms[42]
- look for complementarities between the networks of medical representatives offered by the partners.[43,44]

Two situations can be distinguished: one or both laboratories advocate an alliance to penetrate into a market, or, they can seek to dissuade potential new entrants. Besides, the configurations of the alliance can be based either on the pooling of identical resources, or on the exchange of complementarities. In the pharmaceutical industry, the licensing agreements can be used in two ways:

1 When a drug manufacturing company tries to penetrate into a market where the promotional 'tickets of entry' are high. Licensing agreements that are designed to 'consolidate' a 'therapeutic concept' usually face a market where competition is already significant (antibiotherapy, anti-ulcerous, cardiovascular). Such a strategy is mostly used when it can realise the following advantages: reducing the selling price of its product, and due to economies of scale, improving the availability of its product in the market through financial clout and credibility of the partner.

Another argument involves the consideration of the following matrix. The market size (generally the number of patients and the frequency of usage) of the medicine corresponds to the value of the therapeutic segment, while company resources (resources dedicated to development, number of medical representatives, training, experience in the considered therapeutic domain) refer to the firm's resources in the market. The matrix creates a diagonal below which it is recommended to resort to a licensing agreement to penetrate an important market with limited resources. Indeed, the size of the market is such that it requires a partner. It also suggests the quest for a sizeable partner, as the biggest companies are reputable for entering markets quickly, and are capable of deploying large and experienced sales forces to market products effectively. Furthermore, as regulatory scrutiny becomes tighter, more trials, as well as more patients in each of them, are required. This scenario also demands major partners as they are capable of developing new drugs more rapidly. Bristol Myers Squibb Company, for instance, which derived more than 95 per cent of its oncology revenues from in-licensed products, has long-standing experience of licensing and developing cancer drugs such as Taxol, Paraplatin and Platinol, and possesses the largest oncology sales force; Pfizer Inc captured the rights to Celebrex by dint of sales and marketing expertise and a record of co-promoting products, such as Lipitor (Warner-Lambert) and Aricept. Merck & Co and Pfizer Inc, two recommended partners, would create tough competition for any new entrants in the cardiovascular area, where they are already strongly established. A licensing agreement would also avoid head-to-head competition (see Table 2).

2 Such a license can be used when the patent is about to establish a barrier to entry,[45] in particular by making possible deferred penetrations; the license, qualified as a 'protection' or as a 'deterrence' agreement, is intended to strengthen the position of the laboratory to the detriment of its competitors.[46] By doing so, an incumbent laboratory tries to prevent the entry of a new laboratory and thus the imposition of a competing standard. Products with delayed

Table 2 License management matrix

		Size of the market		
		Small	**Average**	**Big**
Resources of the company on this market	Strong	Internal Development No licensing-out	Internal Development No licensing-out	Internal Development No licensing-out
	Average	Internal Development No licensing-out	Internal Development or Co-development	Co-development Licensing-out Co-promotion Co-marketing
	Weak	Internal/Co-development Licensing-out Co-promotion Co-marketing	Co-development Licensing-out Co-promotion Co-marketing	Co-development Licensing-out Co-promotion Co-marketing

launches can be five years old. An example is the alliance (May 2000) between Merck & Co and Schering-Plough for the purpose of co-developing a combination of drugs against asthma and cholesterol in order to counter generics and to extend the life-cycle of their best-selling drugs on the US territory (Zocor and Claritin, respectively). In 1993, in order to pre-empt potential competitors, Merck & Co, through a joint venture with Johnson & Johnson, launched a strategy of cannibalisation of one of its products that came off patent, with the development of an over-the-counter version of its ulcer drug (Pepcid).[47]

These agreements do not mean the end of competition, but modification of the rules of competition. Sometimes, the consensus brought about by the solidarity of all partners appears to be indispensable to the launch of a new product; in other cases, the establishment of standards[48–50] between the members of a network allows the formation of protected market territories.

Finally, the interest of those commercial alliances can also lie in the search for complementarities. Indeed, the training of the medical representatives to the needs of a given clientele is an important source of competitive advantage; indeed promotion in doctors' offices indeed requires a network of medical representatives which differs from that of the distributive network serving hospital complexes and private clinics. So when pharmaceutical laboratories offer products that aim at different customer groups, trade agreements can allow each of the associated laboratories to obtain considerable earnings that result from the complementarity of their networks of medical representatives, due to the mobilisation of their commercial teams with different customer groups. This search for complementarities can base itself on therapeutic, as well as geographic segments.

- In the former case, when its product presents multiple applications, a laboratory can keep marketing it in a particular therapeutic segment, and transfer the rights to another laboratory with regard to the other therapeutic segments. One example is Erythropoietin Alfa or EPOGEN® (Epoetinalfa), an Amgen's drug mainly used to treat anaemia in patients undergoing hemodialysis or chemotherapy. The latter was licenced-out to Johnson & Johnson, which marketed the drug to everyone except haemodialysis patients in

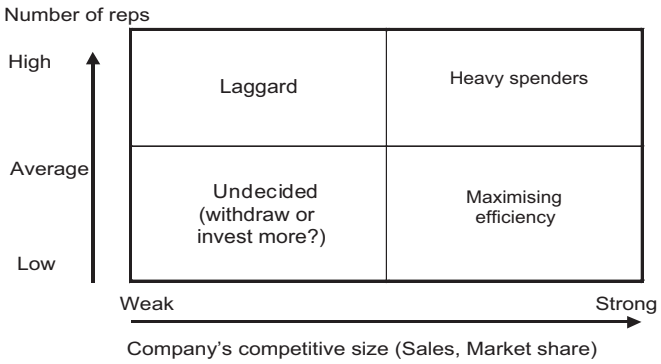

Figure 2 The competitive mass needed to provide adequate market coverage
Source: adapted from the 'McKinsey Quarterly'

the US market, which was a segment that Amgen Inc kept for itself.

- In the case of geographic segments, every laboratory brings its product to the network in the geographic areas where it is most effective. Maximum efficiency can be achieved through better training, superior planning, economies of scope, market share or extended market coverage per salesman (Figure 2).
- A notable agreement was concluded between Solvay Pharmaceuticals Inc and Upjohn Inc in the field of the central nervous system. Solvay Pharmaceuticals Inc and Upjohn Inc had an antidepressant, Solvay's Luvox (Fluvoxamine Maleate), with important potential, and a major anxiolytic, Upjohn's Xanax. Within the framework of the agreement, every laboratory markets the product of its ally in the geographic zone it covers best. In this case, the alliance allowed for optimisation of the commercial efficiency of the product, all the more as the medical target was identical. Also, Johnson & Johnson was allowed to market (through its subsidiary Ortho Biotech Inc) the recombinant human erythropoietin under the tradename PROCRIT® (Epoetinalfa – EPO) for all indications outside the USA, with the exclusion of Japan and China where EPO was marketed as Espo by the Kirin-Amgen joint venture.

MISTRUST AND PURSUIT OF COMPETITION

Those who participate in an alliance face certain risks. Indeed, sharing a product with another laboratory which is probably a competitor in other segments creates major difficulties. The 'Not Invented Here' (NIH) syndrome, which corresponds to the fact that a laboratory succeeds only with difficulty in appropriating the product of its partner, stemmed from a development effort that primarily benefits substances discovered by its own R&D department, to the detriment of products acquired under license from an external entity. Thus the team that should develop a substance acquired under license considers it to be 'foreign' and does not invest enough to value the product of its partner. This phenomenon, which was thought to be limited to development activities, has also extended to commercial agreements, which can suffer from the weak implication of the partner: the commercial workforce experiences difficulties in implementing a cooperation strategy with a network of medical representatives of a competing drug manufacturer. In every case, the license has to find the means to limit these risks. Various solutions can be implemented. For

instance, Lipha SA (France) proposed a duplication of the structures: every team developed a product invented by its internal R&D team and another one, from the partner company. A stronger customer–supplier relationship can then be established and the rise of the NIH syndrome is curtailed. Other companies opt for the creation of task forces which, benefiting from a strong autonomy, ensure that all operations required by the conclusion of a licensing agreement are fully implemented. The licensor can also opt for a 'best effort' clause to ensure that time and money will be devoted to the product. Objective targets or milestones have to be set (minimum marketing and advertising expenditures, training, sales forces, sales objectives, quality standards etc.).

Studies on the internal functioning of these alliances examine the preservation of the rivalry within the alliance as well as the factors of asymmetry that hamper the stability of the cooperation. Indeed, unlike vertical partnerships between customers and suppliers, strategic alliances are marked by the ambiguity of the relationship.[51–53] Jacquemin analysed the risks of one partner developing a strategy against the interests of the other.[54] More generally, the access and the appropriation of the capabilities of one or several partners constitute a major source of conflict. Turq considers that alliances can be the stage of aggressive behaviour between partners:[55] a joint venture can allow one of them to acquire a specific know-how that was, until then, the exclusive property of its partner. The signature of an agreement with a competing company is another illustration of opportunistic behaviour. The exchange, even if it is real, can be uneven: the research activity of one of the associated drug manufacturing companies can prove to be far less productive than that of its partner. Finally, a product may not reach expectations. In the Genentech's deal with Alteon Inc, both companies struggled to develop Alteon's Pimagedine for treating diabetic kidney failure. Unfortunately, the product could not go through the clinical trials, which ended in a subsequent termination of the alliance (all product rights were returned to Alteon). Finally the agreements of R&D introduce a risk of technological dependence, for example when a biotech company acquires a disproportionate amount of power over an allied drug manufacturing company.

CONCLUSION

In the pharmaceutical sector, cooperation, which is not limited to R&D activities, also benefits doctors and patients, by ensuring the widest availability of a product. The cited cases show that relational strategies can improve the efficiency of distribution networks. They also however, underline that laboratories must sign agreements that stipulate the conditions under which every producer can accept in his networks, products created by others, in order to avoid any risk of competition with his own products or sales networks. Besides, the increasing importance of inter-firm cooperation is, along with acquisitions, and vertical integrations, one of the major elements of the reorganisation of the pharmaceutical landscape. The agreements of license represent a particularly interesting example of both technological and commercial efficiency. They define inter-industrial exchange interests where interdependences are strong, while preserving competition and strengthening partners' international dimensions.

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