



# ASSISTANCE AGREEMENTS IN BIOTECHNOLOGY COMPANIES: AN ADVANTAGE FOR THE ACQUISITION OF NEW CAPABILITIES AND GROWTH?

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## ABSTRACT

*Cooperation agreements in biotechnology allow America to observe the complexness close alliances. The market globalization, the exorbitant prices of R&D and the fast changes in technology, are arguably amongst the principal reasons that push firms to establish cooperation agreements. Biotechnology companies use this instrument to develop external options in the explore for resources and missing experience. This paper sets out to identify if such cooperation agreements in biotechnology firms square measure a plus in themselves, sufficient for the acquisition of new capabilities and if they assist the expansion of those firms. For this approach, a private info of firms within the 2 most advanced countries during this sector: u. s. and uk, will be used.*

## 1. INTRODUCTION

The chemical industry, considered as the 1st to own had a scientific base, constitutes a very heterogeneous sector. Molecular biology is complemented by the industry in its steps towards the conquest of the molecular world. We might even say that the wedding of those 2 sciences, which shaped the young biotechnology sector, is indivisible. In addition, the birth of the large international firms that job nowadays in biotechnology is that the results of firms that developed since the Nineteen Twenties. They were restructured while being interested in the always-promising sectors of pharmacy and agrochemicals. These two sectors type market structures in associate degree atmosphere of terribly high competition. In these industries, the R&D department is the primary component of importance, associate degree the costs to finish an innovating product square measure usually terribly high. For example, it will essentially take from 10 to 12 years and five hundred to 800 million America greenbacks, on average, for a new drug to be made out there on the market, included in these figures square measure the chance prices of development (Sachwald, 1994; Drew, 1999; DiMasi, 2001). This article contains a double profile. The first one implies the paradox in reason of a posh causal structural industrial cooperation (asymmetric differences), while the second profile involves a small number of studies made on the relationship between cooperation agreements, advantages and performance (taken in the broad sense: profitability, but also growth, stability, etc). First, the methodology and hypothesis used in this work will be described. Secondly, a literature review regarding the theoretical aspects and forms of cooperation agreements will be presented. Thirdly, the way in which these alliances contribute to the strategic aims of the partners and the way biotechnology firms cooperate will be described. Finally, the article finishes showing the results obtained through this research and conclusions are drawn suggesting that alliances by itself do not explain nor justify the pace of growth of emerging biotechnology companies . Within this scenario, the question that we will try to answer is: Why biotechnology managers choose collaborations instead of other possibilities? In addition, we want to know, what are the advantages and the disadvantages that the managers can encounter while engaging in this mode of agreements (does this practice really increase the company's knowledge, open the door to intellectual property, make easier access to venture capital and ensure growth?).? We created a database of 900 biotechnology companies (from more than 3500 biotechnology companies in the world) with and without alliances in the United States and United Kingdom. We selected these countries because they are the leaders in this sector, not only by the number of companies, but also by their quality. We will analyze if the biotechnology companies with cooperation agreements develop an advantage in the acquisition of new capabilities, in relation to social capital, intellectual property, venture capital and at last, in which sector they're a lot of active (human health, agriculture, environment, etc.).



## 2.METHODOLOGY

We used secondary data to produce a resourceful and exclusive info of biotechnology firms from the u. s. and also the uk for the amount 1996- 2001. SPSS statistical software system was used to analyze the information for regressions and correlations. Because many growth promoters square measure concerned in the success or failure of biotechnology firms, we used completely different dependent and freelance variables. The dependent variable was the fast growth of the businesses, which was measured by the increase of fifty or a lot of within the range of staff throughout the amount 1996 to 2001. We use the range of staff as a result of we have a tendency to work with non-public and public firms. We cannot use the financial gain knowledge from non-public firms, because for non-public firms that data isn't publically available. The independent variables were treated in a metric approach (for example the age of the companies) or categorization type by yes/no (supply/absence of alliances). The variables were: the age of the company (variable metric calculated over variety of years since the foundation), area of exploitation, such a human health or agro/bio (dichotomy yes/no), patents (yes/no), venture capital (yes/no) and finally, alliances (yes/no).

These factors influence the behaviour of the companies at a point in time, such as now, and they show very different performances in an environment of similar characteristics. The literature shows that the companies do not have the same characteristics, nor the same competences or routines; the companies generate a variety of different capabilities, as if each one of them were equipped with limited rationality (Nelson and Winter, 1982). The companies do not have identical resources and they do not react in the same way either to same internal or external stimuli, which results in certain companies growing much more quickly than others (Azoulay and Weinstein, 2000). This complexity surrounding the various factors allowed us to construct our research assumptions.

The Hypothesis Technological and commercial alliances between specialized biotechnology companies (SBC) and large companies (generally multinationals) are not sufficient to support the fast growth of the SBC. We assume that the cooperation by itself does not explain the fast growth or the acquisition of capabilities in biotechnology companies. Circumstances place the large companies and the SBC in a kind of constant interdependence in the search for expertise, resources and knowledge. This situation shows that cooperation is a route almost forced upon the SBC. Alliances can provide financial resources and complementary capabilities to the specialized companies in biotechnology (Hagedoorn and Schakenraad, 1994). These resources can be crystallized in activities like R&D, marketing, manufacture, distribution, protection and defence of the intellectual property also as approval systems by national organizations (like the FDA within the United States). However, the SBC needs a lot of than an easy cooperation agreement for growth. They need a virtuous circle with the interaction of all factors like risk capital, intellectual property and knowledge.

The term "cooperation", as Yoshino and Rangan (1995) and Ingham Mothe (2000) explain, generates very heterogeneous realities. This concept is usually unclear, because it is utilized to specific all the written agreement forms, such as joint ventures, consortia, licences, distribution and R&D agreements, etc. The definition of alliance and cooperation are comparatively obscure, but additionally made and biological process (Bouayad, 1996). In fact, to define cooperation or alliance is a complicated task. This is owing to the paradox of the terms and also the generic use manufactured from these concepts that cowl infinite prospects ("coalition", "partnership", "agreement", "cooperation between firms", "joint ventures", etc). Economic and management scholars have contributed partly to this confusion, from the great quantity of definitions and classifications that they have produced (Combe, 1995). In the same way, the concepts of cooperation or alliance are often ambivalent (Dussauge and Garrette, 1999). The expression "cooperation" relates to the relations established in a durable way to divide limited resources, without putting in jeopardy the autonomy of the partners. In addition, the duration of alliance, according to several authors, is more often of a strategic nature (Aliouat, 1996). Alliances are contractual, formal cooperation agreements, as opposed to the multiple informal forms of cooperation. The definitions that follow show the diversity of concepts. Combe (1995) defines alliance as an association of a formal or informal character, between two or several concurrent companies (or potentially competitors) or complementary, with or without financial participation. The allied companies try to rather develop, produce or market goods by sharing their competences rather than resorting to the commercial contract whose range is limited to the short term or total integration, marked by the disappearance of an entity. This concept coincides with that planned by Jolly (1995). The author adds that the acquisition of unilateral grant of licenses, research below contract or total fusions square measure operations that escape to the alliance. For Gulati (1999) strategic alliances are voluntary cooperation agreements that imply exchanges, division or co-development and which will embrace contributions like funding, technology or specific goods. The growth of engineering companies, based on data, plays a very vital role within the development of the agreement. However, this role can be compete in numerous ways that. Either the companies opt for internal development (independent), or they prefer external growth (hierarchical or cooperative). In this paper, we can concentrate on external growth, particularly the possibility of cooperation in engineering industry1 .



### **The Theoretical Aspects**

For several years, cooperation agreements between independent firms have not ceased to multiply, in order to start out R&D programs, production scheduling or for the promoting of technological merchandise (Lewis, 1990; Hagedoorn and Schakenraad, 1994; Combe, 1996; Gulati, 1998). The explanations, which we have a tendency to notice within the literature, that justify the existence of such cooperation agreements, are various and generally ambiguous. Several authors merely say that economic process is partially accountable for the expansion of cooperation between firms (Lewis, 1990; Hagedoorn, 1993; Policet and Noel, 1994; Yoshino and Rangan, 1995; Dussauge, and Garrette, 1995; 1999; Doz, 1996; Gulati, 1998; 1999). Also, this technological environment is in constant transformation and the speed of amendment is incredibly quick (Pisano and Mang, 1993). The alliance strategy can be helpful, as Niosi (1994, 2003) explains, for limiting (and controlling) the growing costs of internal development (R&D) of high technology. In addition, alliance can facilitate the partners to rise in the market hierarchy (Hagedoorn, 1995; Aliouat, 1996). However, Jacquemin and Remiche (1988) illustrate the difficulty in classifying technological alliances, because they square measure intermediate sorts of organization between the hierarchies and also the markets. Knowledge cutting off has a crucial role in cooperations (Badaracco, 1991). In such situations, each partner contributes with a part of his resources and competencies (technology, equipment, financing, know-how, etc). In response to this contribution, the partners will request to profit from the results, which will be shared, or not, within the belongings or the other sorts of advantage considered in the agreement (Niosi, 1994). The knowledge, is created during the alliance (Badaracco, 1991, Inkpen, 1996, Doz, 1996, Doz and Hamel, 1998, Ingham and Mothe, 2000) as a result of the collective learning generated by the partners during the cooperation agreement. The more the agreement is long, dynamic and interactive, the more the prospects of learning and accumulation of data can increase for the partners.

### **The Alliance Management**

Before approaching the modes of alliance management, it is interesting to notice a series of recommendations getting used for the event and negotiation of what Gaudin (1988) calls, a "reciprocal charter of rights and obligations" in cooperation. This critical charter will be used because the base for higher negotiating the agreement. The charter should embrace program objectives; agreement duration; the implement choice; clarification of mutual interest; instruments of direction, execution and control of the agreement; rules or principles of exploitation and however to shield results; and at last, the liquidation of the cooperation agreement. In taking into account these elements and stipulating the measurements and objectives most easily and clearly, the cooperation management agreement should clearly be expedited (Killing, 1988). Thus, the strategies of a manager can rely on the partner objectives, the time of the alliance, the type of technology to be exploited and also the market to be used. It would even be necessary to think about the characteristics of every manager, because there square measure not 2 managers WHO can react in a consistent means once facing an equivalent constraint (Nelson, 1994; Williams, 1994; Carroll, 1994). In addition, it is important to think about environmental uncertainty in management. This contingency can be caused by letter of invitation of technology, by the preferences of the customer, the actions of the competitors, the governmental policies, and the suppliers' capabilities, but additionally by the potential partners. How partners square measure organized to work with one another, is one of the keys for successful cooperation, (Loranger and Roos, 1992). A manager that is a skilful alliance manager is in a position to face the issues and to beat the difficulties a lot of simply. We refer here to the difficulties of the social atmosphere (language, culture), the other partners, and legal framework (Yoshino and Rangan, 1995). However, it is necessary that the objectives of the allies are as complementary and specific as potential. It is essential also to ascertain a joint knowledge carrier which the method is as interactive as potential (Lorange and Roos, 1992). Thus, the alliance success will rely of the expertise, quality, and the manager's talent (Woiceshyn and Hartel, 1996). The alliance management is not a simple task given the multiplicity of the constraints that they produce. Managers must compose, within the existing legislation, the structures of the market in which the alliance evolves or with the present capacities of communication (AECEC, 1992). The size of the partners (asymmetric influence) is associate degree other characteristic that ought to be considered as a result of the input met by the international corporation in alliances mustn't be essentially an equivalent that of an SBC. In addition, the modes of alliance management will amendment according to whether or not they square measure national or international, high-tech or mature technology, formal or informal, as much as their goals, sometimes that gift divergent characteristics (Niosi, 1994). In fact, the modes of alliance management should unremarkably be specific to the culture of the firms that begin within the cooperation. Moreover, in any agreement, it will be necessary additionally to think about the management of the belongings which will result from this cooperation agreement (Lerner and Merges, 1997). Another important purpose is the degree of self-seeking shown by one or each partners expressed throughout the cooperation agreement (Axelrod, 1984).



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