An integrated strategy for launching a new product in the biotech industry

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Abstract
The scope of this paper is to propose an integrated strategy to support the decision process of a semiconductor company interested in entering a new market and launching a new product in the biotech industry. The complexity of the environment and the high numbers of factors involved, leads to the conclusion that the traditional tools and models of the strategic management are not enough to analyse fully the market and to elaborate a winning strategy. For this reason an integrated approach is developed, which is able to combine elements coming from different perspectives through the introduction of new ones. The proposed approach is then applied to a real situation.

Introduction

Over the past decade, the increased competition of the environment, the augmented complexity of the products that have to be realized, the high demanding customers, the high numbers of competences and technologies required in the development process of the product, have lead high-tech companies to develop new strategies for defining the positioning in the market in the launch of a new product. In fact, as the complexity of the environment increases, the problem regarding the elaboration of a winning strategy able to define positioning in the market, relies on the fact that many different elements have to be taken into account simultaneously in order to take a correct decision.

The high number of variables involved (numbers and characteristics of competitors, high numbers of technologies that can be used and/or are required for developing the products, number of competences required, needs of the customers, etc.) and the interrelationships among them, lead to the conclusion that a high-tech company cannot avoid considering, in its decision process, a plurality of strongly linked factors. These interrelated elements lead to the formulation of the final strategy.

The strategic models available in the traditional literature offer different methodologies of positioning in a new market. In fact, there is abundant literature that provides tools for positioning in a new market. However, in relation to the environments we are going to consider, these models are mainly defective, since they are not able to consider many elements at the same time. In fact they focus only on specific elements, but some elements are always missed.

Most famously, Porter's based models for strategic positioning (Porter, 1979, 1980, 1985; Barney, 1991; Conner, 1991; Foss, 1996; Wernerfelt, 1994; Peteraf, 1993; Cockburn *et al.*, 2000; Spanos and Lioukas, 2001) underline that the attractiveness and profitability of a business is determined by the interrelationships among the famous five forces and by the firm activities. In these models, industry structure plays a major role. However, in this analysis, many elements are missed and not considered, such as a major focus on customers' needs and on the need to satisfy them.

Resource-based approaches (Coase, 1937; Penrose, 1959; Nelson and Winter, 1982; Teece, 1982; Rumelt, 1984; Wernerfelt, 1984; Barney, 1989, 1991; Conner, 1991; Powell *et al.*, 1996; Eisenhardt and Martin, 2000; Priem and Butler, 2001) focus mainly on the internal characteristics of the company for defining positioning, since the company is viewed as a bundle of unique resources. In this way, the competitive advantage arises from elements that reside in company, and the links with external factors are not strong.

The need for an integrated approach have been already faced by some authors, who tried to integrate the resource-based view of the firm and Porter's five forces model (Amit and Schoemaker, 1993; Cockburn *et al.*, 2000; Spanos and Lioukas, 2001). This is proof of the necessity of integrating many elements in the same approach, as the external environment becomes more complex and the numbers of the variables involved increase.

Within the literature, however, strategies of this form are not very common, since much of the literature concerned with firm level strategy pertains to the "elaboration or refinement" of existing strategies (Conner, 1991; Dierickx and Cool, 1989, 1990; Ghemawat, 1991; Peteraf, 1993; Foss, 1996; Priem and Butler, 2001).

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This paper provides an integrated framework for supporting the decision process of a high-tech company interested in entering a complex market, where many variables have to be taken into account.

The paper is articulated in three main sections:

1 A general description of the requirements of the methodology and the problems it wants to solve.
2 A discussion of the problems of traditional approaches for company positioning.
3 A description of the methodology and its use in a specific case study (the launch of a microdevice for genetic analyses in the biotech industry for a semiconductor company).

The environment

This paper aims to present an operative methodology to support the decision process of a semiconductor company interested in entering the emerging market of microdevices (lab on chip, biochips and microarrays) for genetic analysis in the biotech industry. The recent sequencing of the human genome has given rise to the need for new, fast and cost-effective technologies capable of analysing concurrently thousands of genes and biological molecules. Microdevices represent an answer to this need.

The decision to enter the market is rather complex due to a variety of reasons.

The product that has to be developed is technologically complex and requires a number of complementary competences for its successful commercialisation. These encompass the technological competences, such as microelectronics, microfluidics and microfabrication, as well as the non-technological ones, such as genomics and pharmacogenomics knowledge, manufacturing assets, financial assets. Moreover, the choice of the available technologies in which the product can be realised, e.g. beads technology, chemical processes on silicon, microelectronics, photolithography on glass etc., contribute to a more complicated product definition and choice. Therefore the company interested in entering the market has to find suitable criteria for defining the product and acquiring the lacking competences. The latter come from different sectors of the industry or even from different industries altogether.

As the environment is *per se* strongly uncertain and dynamic, and also taking into account the high risk and the competition, seeking the right solution will be even more difficult. Many companies are interested in this emerging market and are trying to establish the best way for entering the market.

This study presents a methodology for defining the company's positioning and the source of the competitive advantage in this market. A series of steps constitute the operative methodology and indicate how to evaluate the competitors, how to choose a possible technology, how to choose potential partners and what role the customers play in the development process.

The requirements

Figure 1 helps to illustrate the logical flow of the decision process undertaken by the company, from which the requirements and the main elements of the methodology can be identified:

- Since the product can be realised using different technologies it is necessary to define the product choosing among different alternatives.
- Moreover, since the products require a number of different technologies that one company alone cannot posses, it is impossible to enter the market alone. In fact, as a consequence of the complexity of the product, the company concludes that its competences and strengths are not sufficient to enter the market and it therefore resorts to look for partners.

As a consequence, the company must decide:

- The specific needs its products will satisfy.
- The required competences and skills.
- The partners that will be involved in entering the industry.
- Criteria for choosing the partners and their competence.

In order to achieve this, the following issues must be taken into account:

The company

The conceptualization of the product implies the company's awareness of its own competences or strengths. The reference to the resource-based view of the firm is, in this case, mandatory (Hamel and Prahalad, 1990, 1994; Powell *et al.*, 1996; Eisenhardt and Martin, 2000; Priem and Butler, 2001). In fact the company can choose a possible product according to its competences and abilities, aware of the fact that its skills both limit and lead its actions. Company's competences trace the boundaries in which the company moves, but at the same time represent the

starting point of its actions: the bridge towards the external environment.

Partners and competitors

The limitations of a firm's competences force the company to look for partnerships that can strengthen its position, leading its structures of alliances (Dyer and Singh, 1998; Mothe and Quelin, 2000). Since it is not possible to enter the market alone owing to the complexity of the product, a company with a clear idea of its strengths and weaknesses will find partners that can complement its strengths (Baum *et al.*, 2000).

The high risk also, along with the awareness that it is not possible to enter alone, opens the doors to collaboration and therefore to a way of sharing the risk.

The company's future vision and an idea of future trends will lead the development of the product. The vision of the future does not only come from the company but also from the potential partners.

In fact the definition of the product is conditioned by the choice of partners.

In this environment competition accompanies collaboration. Collaboration (Hagedoorn, 1995; Gulati, 1998, 1999; Hamel *et al.*, 1989, Kanter, 1994) and competition (Hamel, 1991) constitute the two sides of the same coin and determine the positioning in the environment, the networks of alliances and the entry mode in the market.

The customers

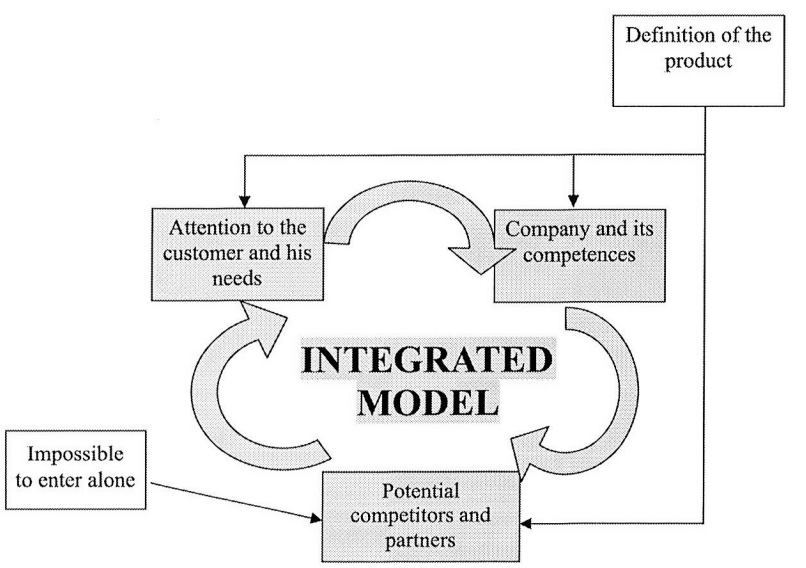
Since the company has to evaluate the competitive superiority of its competences and to adopt criteria for choosing the potential partners that will provide the lacking competences and will co-develop the product, valuable selection criteria will be the satisfaction of the customers' needs, which constitute the primary element in this approach (McKenna, 1991; Prahalad and Ramaswamy, 2000). In fact, in the range of the possible competences that can concur to the definition of the product, the competence that can best satisfy customers' needs will be chosen.

As a consequence, customers' needs lead the evolutionary path of competences and define the final product.

In this phase the company defines its objectives and the strategic actions for achieving the desired outcomes. Kaplan and Norton (2000) provided a powerful model for mapping the companies strategies in a top-down sequence. In our situation it is difficult to follow a top-down approach in the definition of the objectives, since, for instance, the customer value proposition and the knowledge, or skills, needed to innovate cannot be defined on a priori base, since they are defined and emerge during the development process of the product.

The base of our approach is that the elements presented above, the company, the customers and the potential partners-competitors, must be considered simultaneously in an integrated synergy, in a recursive way. The definition of the entering strategy will be the final result of the synergy that exists among them. The synergy among these elements will be the source of the competitive advantage.

Figure 1
The logical flow of the operative methodology



The literature

In this section we try to apply to the described situation the most common strategic models available in the literature. In fact the goal is to demonstrate that no one of them is complete for elaborating a strategy in the environment we want to consider. From our point of view, they can be grouped in the following clusters:

- Porter-based models;
- resources-based models;
- dynamic capabilities models;

Porter-based models

According to Porter-based models (Porter, 1979, 1980, 1985; Barney, 1991; Conner, 1991; Foss, 1996; Grant, 1991; Amit and Schoemaker, 1993; Wernerfelt, 1994; Peteraf, 1993; Cockburn *et al.*, 2000; Spanos and Lioukas, 2001) the firm should:

- identify the attractiveness of an industry, considering all competitive forces;

- define its strategy within the industry; and
- design its value chain in order to strengthen its competitive advantages in the industry.

Porter's approach yields sharply defined tools for understanding exactly why some firms and industries are likely to be more profitable than others. The five forces analysis is essentially a structural map of the degree to which competitors, entrants, substitutes and vertical bargaining power exert pressure on the margins of a firm in a particular industry.

If we try to apply this sequence to our case study, we fail immediately. In fact, we cannot identify the attractiveness of the industry if we have not made a decision about which specific product we would introduce, as different product configurations can result in a completely different attractiveness; at the same time, we cannot decide if an industry is attractive in general, but only with regard to the specific competence of the firm and the set of alliances it can make.

Resources-based models

Resource-based approaches (Coase, 1937; Penrose, 1959; Nelson and Winter, 1982; Teece, 1982; Rumelt, 1984; Wernerfelt, 1984; Barney, 1989, 1991; Dierickx and Cool, 1989, 1990; Teece *et al.*, 1990; Conner, 1991; Schoemaker, 1992, Ghemawat, 1986, 1991; Peteraf, 1991; Hamel and Prahalad, 1990, 1994; Powell *et al.*, 1996; Eisenhardt and Martin, 2000; Priem and Butler, 2001) somehow turn Porter-based approaches the other way round. They postulate that competitive advantage comes from having resources that create value in the marketplace and are unique.

The possessions of resources that can be used profitably in a new context determine the entrance of the company in a new market.

Even if the resource-based view of the company gives fundamental hints for the definition of our methodology (our focus is on competences and resources), its practical implementation would be difficult. If we start the analysis of the competences of the firm without specific hints on the products that are more promising and on possible partners, then:

- we will have to focus on a very large sets of competences (as different product configurations could require a completely different set of resources) increasing the cost and time of the analysis; and in this area, long time lag could make the entry strategy totally ineffective;
- we could decide to focus on a set of competences where we are very good, but we are unable to find other companies able to complement them and to make agreements with us.
- focusing only on the company and its core competences is not enough for elaborating a winning strategy in the context we are analysing. In fact, as we have stressed before, there are other elements that have to be taken into account. These elements also can constitute a source of competitive advantage:
  - the potential partners for acquiring lacking competences (Kogut ,1988; Hamel and Prahalad, 1990; Simonin, 1999; Wernerfelt, 1984; Collis and Montgomery, 1998; Hamel, 1991; Sakakibara, 1997; Mothe and Quelin, 2000; Baum *et al.*, 2000);
  - the customers (also in this case a broad literature discuss the importance of the customers, such as Prahalad and Ramaswamy, 2000; Ramirez, 1999; Urban and von Hippel, 1988; McKenna, 1991).

Dynamic capabilities models

The RBV of the firm is also the starting point for another theory that explains the source of the competitive advantage of a firm; this is the "dynamic capabilities view" of the firm (Teece and Pisano, 1994; Teece *et al.*, 1997; Eisenhardt and Martin, 2000). Dynamic capabilities are defined as the organizational and strategic routines by which managers alter their resource base – acquire, and shed resources, integrate them together, and recombine them – to generate new value creating strategies (Grant, 1996; Pisano, 1990).

Dynamic capabilities drive the creation, evolution and recombination of other resources into new sources of competitive advantage (Teece *et al.*, 1997; Eisenhardt and Martin, 2000; Kogut and Zander, 1992; Henderson and Cockburn, 1994; Helfat and Raubitschek, 2000, Eisenhardt and Galunic, 2000; Powell *et al.*, 1996; Ranft and Zeithaml, 1998).

For instance, the creation of a the network of alliances can be inserted in the dynamic capabilities view of the firm since a network constitutes a new resource configuration (Hagedoorn, 1993, 1995; Powell *et al.*, 1996; Gulati, 1998, 1999; Baum *et al.*, 2000; Dyer and Singh, 1998).

The dynamic capabilities view of the firm has been often criticized since it lacks empirical ground and it does not provide operative tools for effectively building new resource configurations (Williamson, 1999).

This study can be reasonable inserted in this view because it considers the formation

of a network, but it tries also to go further, since it wants to provide operative tools that can be effectively used for building this new resource configuration.

The methodology

This operative methodology is based on:
1 the analysis of the company;
2 the competitors/potential partners; and
3 customers.

These three elements are considered in a simultaneous and synergistic dialogue. Their strong interrelationships constitute one of the primary novelties of this approach.

The methodology is articulated in six steps and works in a recursive way, as it is explained in the Table I.

The main information collected in each step will be described in the following paragraph, showing also some practical examples of their use in the specific case study of the launch of a new microdevice for genetic analysis in the biotech industry. (A microdevice is a handy, effective tool for performing genetic analysis – DNA and RNA analysis, blood analysis – in a short time).

It is important to note that we repeat each step, with an increasing degree of detail. Moreover, the information collected in each step can help to reach a higher degree of detail in all the other steps.

The operative approach

1 The company

The starting point of this step is the analysis of the company interested in entering the new business. The company has to be studied according to its distinctive "competences". The possibility of applying its competences to businesses different from the usual elicits its interest in the new market.

In this step the resource-based view models can be used in order to identify the core competences of the company.

In the specific case study, the semiconductor company has been studied according to its core competences that could be applied in the biotech industry. Its core competences have been defined (microfluidics and microfabrication). These competences are strategic for successfully enter the emerging market of microdevices for genetic analyses. This match reasonable elicits the interest of the semiconductor company in the market.

2 The competitors

The analysis of competitive products gives valuable hints on the technological solutions currently used and helps identifying the most promising technologies and future trends. Companies analysed in this phase can also become potential partners. Information on competing products must be gathered in order to support the positioning decision.

Regarding the specific case study, since the product that has to be launched represents a radical innovation, competitive products have been analysed two different ways:
1 the traditional tools for genetic analyses have been studied compared to the general features of the more innovative microdevices. They are studied because they are still in use and have the biggest market share.
2 A deep analysis of the already existing microdevices has been carried out.

The results are now presented:
1 The analysis of the traditional products currently used for performing genetic

Table I
Steps of the methodology

Step	Information provided	Tools
1 Company analysis	Distinctive competences	Resource-based models
2 Competitors analysis	Technological solutions adopted and general features of the products of the competitors	Internet, interviews, industry magazines
3 Customers analysis	Needs and required applications	Interviews and e-mail surveys
4 Technological competences analysis	Ranking of the current technological solutions according to the satisfaction of customers' needs	Industry magazines and interviews
5 Alliance analysis	Map of the competences required in the business. Classification of the companies according to their distinctive competence. Map of the existing alliances	Internet, industry magazines
6 Definition of the network of alliances	Potential network of alliances	Conclusion of the previous steps

analyses has enlightened the advantages and disadvantages of the more innovative microdevices, as it is shown in Table II. The results allow in-depth understanding of why microdevices should be destined to replace the traditional equipment for molecular biology tests. In fact it is possible to notice that microdevices present a high number of strengths over the traditional tools. These results are important for having a preliminary idea of the profitability of the market. The high cost of the microdevices is due to the novelty of the technology.

2 The analysis of the microdevices already present in the market is paramount in defining the state of the competition and the most promising technological trends.

In order to do that, the product has to be broken up in its main distinctive elements.

Data can be collected in specific tables in order to enlighten the specific features of the products (such as probes, chip material, detection, density, technological features, etc.). Microdevices can be made in different ways, due to different combination of their features (number and kind of probes, material, kind of detection and density, technology used). This paper does not aim to give a full explanation of those details, but it wants only to provide a general idea of the methodology used. The microdevices currently marketed are usually made of glass, they perform SNP genotyping and gene expression profiling

See Table III for more details (Table III contains only a part of the whole analysis).

3 The customers

Customers play a primary role in the definition of product.

Different techniques can be used to gather needs and data from the customers, such as interviews and surveys via e-mail. In the case study, customers have been divided into two groups:

1 Potential customers for microdevices.
2 Customers that already use microdevices.

Interviews and surveys to the customers aim to reveal:

- Interest in microdevices.
- Possible applications for microdevices. In segmenting the market, customers are divided according to the required application for microdevices.

In this way the interested company can identify the market segments. Of course, once again, its distinctive competences will also define the positioning (Table IV).

- Main functions required.
- Areas of improvement for current microdevices.

The main area of interest (main application) turned out to be the DNA analysis (SNP genotyping and gene expression profiling), due to the remarkable advances of the new sciences of pharmacogenomics and genomics, which are leading to the personalised medicine.

At this point, a more specific quantitative analysis of the dimension of the potential market is mandatory (data are not presented here).

Moreover, direct interviews and surveys to customers, who already use microdevices, helped in identifying the main areas of improvements or required functions for SNP genotyping and gene expression profiling as:

- higher density;
- better accuracy;
- better speed;
- better detection;
- lower cost;
- higher flexibility;
- need for customization.

4 Technological competences

Once the area of "SNP genotyping and gene expression profiling" has been chosen as the target area and the competences of the semiconductor company (microfluidics and microfabrication) result suited for this application , the semiconductor company has:

- to evaluate the most promising technologies for developing the product;
- to find potential partners, always according to its distinctive competences.

Since the products considered in this approach are technologically complex, technological competences require a particular attention and study. In fact the choice of the technology conditions the

Table II
Advantages of microdevices over traditional tools for genetic analyses

Microdevices	
Strengths	**Weaknesses**
Time reduction – high speed	High cost
Manpower reduction	
Reagents reduction	
High through-put screening	
Less amount of genes required for the analyses	
Simultaneous analyses of more genes	
Better temperature control	
More precision and accuracy	

development of the product and at the end determines:

- performances of the product,
- ability in satisfying customers' needs,
- potential partners.

By combining the customers' needs (refer to Table V in step 3) and the existing technological solutions (refer to Table III in step 3) it is possible to identify the most promising technology that can concur to the development of the product for SNP genotyping and gene expression profiling (refer to Table IV in step 3).

For this purpose, a needs/technological solutions matrix is used. Each technological competence is ranked (from ++ to –, with all the intermediate levels, denoted by + and –) in order to identify which one could better satisfy a specific need (Ulrich and Eppinger, 1995).

Each cell contains also the name of the company with the correspondent technological competence.

The ranking is made possible by data collected from customers and producers.

This analysis is the starting point for identifying the partners that can provide the technological expertise.

The results are summarized in Table V.

5 Alliances

Once a company has decided to enter the new business and once it has identified and defined the product with the most promising technologies, it needs to select potential partners in order to acquire the lacking competences to successfully commercialise the product. The previous needs/technological solutions matrix assists in identifying the required technological competences for better satisfy customers' needs.

However, in this market not only technological competences are necessary.

The other competences and assets necessary to realise and successfully commercialise the product range from bioinformatics, genomics, molecular biology to distribution channels, manufacturing assets, complementary products and reagents, brand name.

The following steps help identifying the potential partners:

1 All the competences (technological and not technological) necessary for the realization of the product have to be identified.
2 All the companies (or the category of companies) that possess those competences have to be identified.

Table III
Competitors analysis, an example

Chip material	Density	Detection	Features, technology	Applications
Plastic		Fluorescence, PE readers	Electronically-controlled microfluidics	Separation of NA
Glass	17,000-12,000	Fluorescence	Photolithography	SNP genotyping, gene expression
Glass	14,000	Fluorescence	Inkjet printing technology	SNP genotyping
Glass		Fluorescence	Spotted microarrays	Gene expression
Plastic	2,400	Agilent 2100 bioanalyzer	Microfluidics, channels, integration	Separation of NA
		Silicon photodetector	Microfluidics, microelectronics	Sample preparation and PCR
Aluminum		Mass spectrometer	Proteins are ionized	Protein mass separation
Glass	3,000	Fluorescence	Printing technology	Gene expression
Silicon		e-sensor detection technology	Integration, bioelectronics	SNP genotyping
Silicon + porous material	High	Fluorescence	Flexibility, electrodes, 3D	Protein analysis, SNP genotyping
Glass	1,600	Fluorescence	Printing technology	Gene expression
		Fluorescence	Microfluidics	

Table IV
Potential end users and applications for microdevices

End users	Potential applications (in order of importance in each cell)
Pharmaceutical companies	Gene expression, SNP, PCR, separation of nucleic acids, protein analysis
Genomics companies	Gene expression, SNP, PCR, separation of nucleic acids, protein analysis
Pharmocogenomics companies	SNP, Gene expression, PCR, separation of nucleic acids, protein analysis
Research institutions	Gene expression, SNP, PCR, separation of nucleic acids, protein analysis, blood analyses
Universities	Gene expression, SNP, PCR, separation of nucleic acids, protein analysis

Table V
Needs/technological solutions matrix for an SNP genotyping and gene expression profiling microdevice

Needs	Technological solutions			
High density	Beads technology (Illumina, Luminex) ++	Photolithography on glass (Affymetrix) 0	3-dimensional layer of porous material (Combimatrix) +	
Accuracy	Microelectronics (Nanogen, CMS) ++	DNA reaction control technology (Qiagen) +		
Speed	Microelectronics (Nanogen, CMS) ++			
Better detection	Microlectronics (CMS) ++	Fiber optics bundles (Illumina) ++	Mass code tagging system (Qiagen) +	Radioactivity (Alphagene) +
Lower cost	Microelectronics (Nanogen,CMS) ++			
Flexibility of the device	Beads technology (Luminex, Illumina) ++	3-dimensional layer of porous material and chemical processes (Combimatrix) ++		
Customized arrays	Microelectronics (Nanogen, CMS) ++	Chemical processes on silicon (Combimatrix) +	Surface tension chemistry on glass (Protogene) +	

Table VI reports the results. The number refers to the competence (initially, also the different colour of the cell referred to the specific competence and category of companies).

- Each company presents in the market is studied according to the already established network of alliances and the range of possessed competences.

In fact the attractiveness of a company as a potential partner comes not only from the technological competences it possesses, but also from its network of alliances, and from the range of competences it has already acquired (compared to the range of the competences that are necessary for developing the product (Gulati, 1998, 1999)).

Moreover, the study of the existing networks gives valuable hints on the competition in the market, since competition is no longer among single firms, but among networks (Hamel *et al.*,1989).

In order to highlight the already established networks of alliance, it is helpful to use a matrix (see Figure 2). Rows and columns contain the names of the different companies present in the market. The various colours of the cells with the name of the company indicate the specific competences of that company prior to its alliance. A black point in the cell indicates an alliance between the two corresponding companies in the row and in the column.

6 Definition of the network of alliances

Defining the network of alliances for successfully entering the market is the goal of the previous steps.

In fact, thanks to this methodology, a company can:

1 identify its strengths in relation to the market it wants to enter (step 1).
2 Identify the current technological solutions (step 2).
3 Identify the most promising market segments (step 3).

Table VI
Complementary competences and companies

Category of companies	Competences or assets
1 Suppliers	Complementary equipment, distribution channels, recognized brand
2 Bioinformatics companies	Software and algorithms
3 Pharmaceuticals companies	Assets for clinical trials, operating expertise, financial assets
4 Pharmacogenomics companies	Knowledge in diseases-related genes
5 Biotech start-up	Technological skills, innovative ideas
6 Genomics companies	Databases with the meaning of the genes
7 High tech companies	Manufacturing assets, financial assets, technological expertise

4 Relate the satisfaction of the customers' needs to the possible technological solutions and start to identify potential partners (step 4).
5 Identify all the competences necessary in the market and choose for partners, not only according to the technological competences, but also according to the whole range of competences necessary for entering the market (step 5).
6 Define a potential network of alliances.

Practical applications

The operative methodology described above has been applied to a real situation. It could be used in any situation characterised by the following elements:

- Rapidly changing environments.
- High-tech sectors.
- Technological complex products.
- Different technologies available for the development of the product.
- High numbers of competences required.
- Need for partnerships.
- Customers involved in the development of the product.

Discussions and conclusions

The proposed operative methodology has been has been already applied in practice by a semiconductor company in order to enter successfully the market of microdevices for genetic analyses.

This methodology has enabled the identification of the main applications for microdevices, the choice of the most promising technologies and the choice of potential partners.

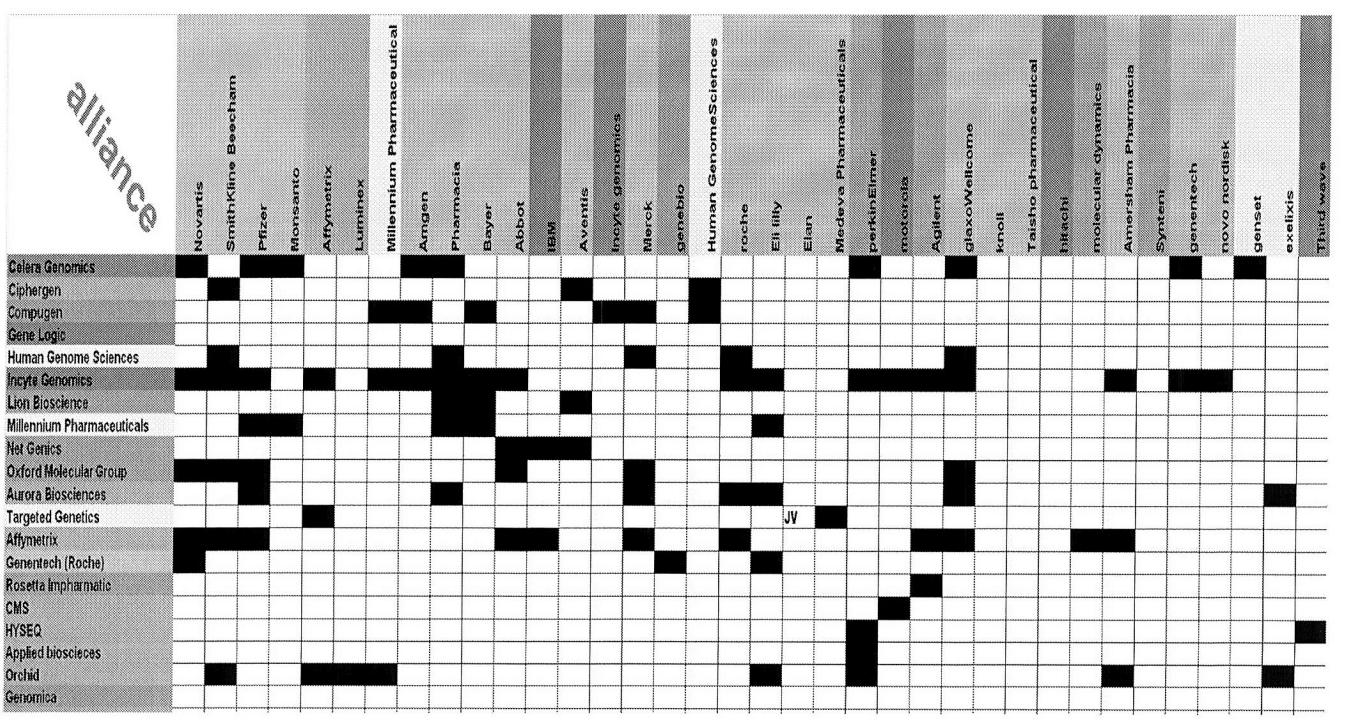
The recent literature on strategic management has underlined the need for new approaches able to support the decision process of companies interested in entering new markets characterised by a complex environment, where the final outcome is conditioned by several elements that have to be taken into account. This operative methodology wants to respond to this need of integrating many elements and factors for correctly defining a winning strategy.

Owing to the increased complexity and risk of the environment as well as the increased number of factors involved, it is necessary to identify operative tools that can simultaneously analyse the interactions among them.

This approach wants to be a preliminary attempt in this direction and can be especially helpful in highly uncertain industries, where there is a wide and changing set of core competences.

Obviously, more work is needed in this direction.

Figure 2
The alliances (in part)



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