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Coopetition and IT business ecosystems: the success of SAP

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INTRODUCTION

It is no easy matter for a firm to consolidate its leadership despite high competitive pressure. The theory of business ecosystems (Moore, 1993; 1996; Iansiti and Levien, 2004) may help to understand and explain such a situation. A business ecosystem is a combination of several organisations: "a heterogeneous coalition of organisations from different industries forming a strategic community of interests or values, structured as a network, around a leader that manages to impose or share its business vision or its technological standard" (Torrès-Blay, 2000). In other words, a core skill that can be shared (such as a technological standard, know-how or norm) will lead to the development of collective strategies, themselves leading to a community of strategic fate: firms will be united in order to promote a specific standard.

Despite being of considerable interest for strategy and management, the question of how to implement collective (Astley and Fombrun, 1983), and coopetitive (Nalebuff and Brandenburger, 1996) strategies in business ecosystems has rarely been developped and still lacks the weight of convincing empirical studies. The gap between more and more frequent economic phenomena (Stanley, 1999; Lengnick-Hall and Wolff, 1999) and the weakness of past research thus justifies studying this matter.

The aim of this work is thus to integrate cooperative and coopetitive strategies into the business ecosystems field of research, by means of the case study method**.** In this paper, our aim is to show how cooperative strategies can help develop a business ecosystem which will promote the development of coopetitive strategies in order to maintain a lasting competitive advantage.

For this reason we chose the case of SAP, an independent group specialised in the development, sale and implementation of ERP (Enterprise Resource Planning). Since the beginning of the 1990s, SAP has become the recognised leader in the ERP market and has known how to maintain this position within a very competitive environment. Yet, the innovations that SAP has introduced between 1990 and today have been less of a genuine

revolution in terms of offer (its products are in fact relatively similar to those of its competitor)s, than in the implementation of collective and competitive strategies within its business ecosystem, which have inferred substantial competitive advantage.

I . BUSINESS ECOSYTEMS: BETWEEN CO-OPERATIVE AND COOPETITIVE STRATEGIES

The traditional approaches to business relationships (competition or co-operation) can be overwhelmed by a new, more ambiguous approach: coopetition. It is within this framework that will we will present the business ecosystem concept.

1.1. Competitive strategy limits

Management studies distinguish three main dimensions in competition: price, promotion and product (Khandwalla, 1981). Thus, competitive strategies make it possible to successfully manage business interdependence if they produce favourable competitive positions as they reduce decisional uncertainty (Pennings, 1981). For example, differentiation based on products can create a well-protected domain with barriers that competitors find it difficult to get through. Nevertheless, in complex environments, interdependencies are often blurred and it often becomes difficult to face the environment's dynamics individually (Emery and Trist, 1965).

In this context, co-operative strategies can supersede competitive strategies by making it possible to face the variations in the interdependent environment efficiently (Emery and Trist, 1965; Astley and Fombrun, 1983). Moreover, certain competitive strategies (such as price wars) can become hazardous for those who start them (Baumard, 2000). Price wars are one of the most extreme competitive strategies. They regularly generate failure and rarely benefit the belligerents (Nalebuff and Branderburger, 1996).

It thus seems that the interdependency of the key players, the complexity of the relationships and the weaknesses of competitive strategies all show that companies would rather take advantage of building up relationships with other companies, even if it means doing so with their competitors.

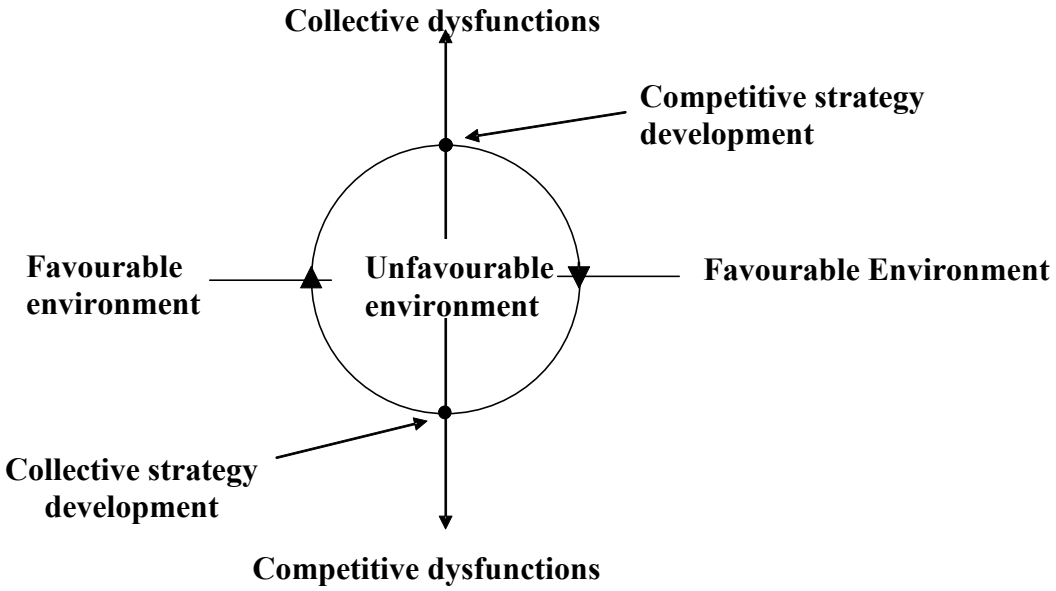
1.2. The dialectic between competition and collective strategies

Collective strategies refer to the human ecology stream (Evan, 1966; Metclafe, 1976; Astley and Fombrun, 1983). This concept is founded on organisational groups (Evan, 1966): firms are able to deliberately combine their actions in order to form a large network that will modify their environment through various regulation mechanisms. It appears that within this reticular environment, individual decisions will be less important than collective ones. Generally speaking, collective strategies aim to manage mutual interdependence and the dynamics of their environment (Astley and Fombrun, 1983; Bresser and Harl, 1986; Thorelli, 1986).

By managing interdependent and dynamic environments, collective strategies can be reactive and able to absorb environmental impacts, or proactive and able to forecast the behaviour of other organisations. Certain researchers have questioned whether collective strategies have had positive or negative results in the mid- and long term. Bresser and Harl (1986) thus described the dynamic relationship between collective and competitive strategies as being composed of two strategic perspectives which are dialectically linked to one another.

For instance, when competition strategies prevail within a single market, the turbulence and decisional uncertainty which may result (competitive dysfunction) will finally incite the organisations to use more collective strategic forms. Yet, when the collective strategies prevail and in turn create dysfunction (a reduction in strategic flexibility or the attraction of new competitors), competitive strategies will be believed to be better adapted to coping with interdependence (Bresser, 1988). It thus appears that competition and co-operation mechanisms make it possible to regulate the features of the environment in order to avoid an entropic phenomenon. This dialectical relationship is summarised in Figure 1.

Figure 1: The dialectic between competitive and cooperative strategy



1.3. Coopetition as an arbitration between competition and cooperation

Analysing coopetition relationships is an extension of the work on alliances (Draulans and al. 2003; Pangarkar, 2003). In the different approaches that make it possible to explain the cooperation between rival companies, however, the paradoxal elements are only barely suggested. Effectively, in the approaches mentioned in the explanation of the partnership relationships between rivals, "[the ambivalence of the hostility-connivance relationships still remains in the field of so-called obviousness]" (Aliouat, 1996). In research on alliances, for example, the paradoxical nature of the relationships is never explicit. Coopetition, on the contrary, which is founded on antagonistic and contradictory concepts, makes it possible to change the paradigm and reconcile concepts that seem unreconcilable.

"There is a duality in all relationships with respect to win-win and win-lose interactions: the success of most businesses is dependent on the success of others, yet they must compete to capture value created in the market and protect their own interests.(...)" (IBM case study: "Strategic coopetition: the value of relationships in the networked economy").

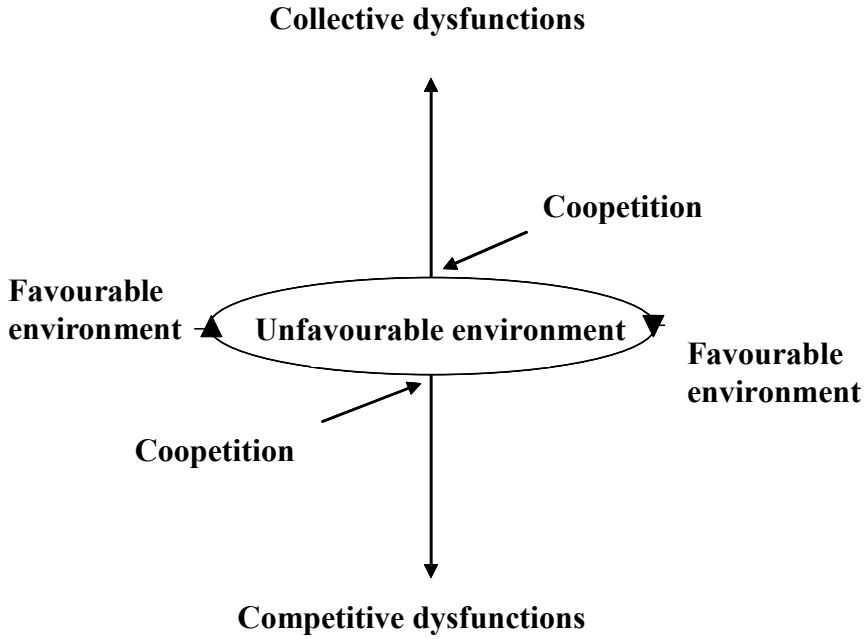
The dialectic relationship between collective and competitive strategies implies that organisations stay vigilant to the possible dysfunction of their strategies. They must maintain their capacity to alternate collective and competitive strategies (Bresser and Harl, 1986). This is all the more important as a co-operative strategy can lead to the development of a very complex inter-organisational network which groups together different types of industry. Implementing and preserving a specific strategy can only stabilise the company's organisation for a very limited period (as each of these two types of strategy has its own specific type of dysfunction). It is important for the firm to react to instabilities and to try to adapt by alternating collective and competitive strategies (Bresser and Harl, 1986). This process of alternating is equivalent to a process of change by which organisations are capable of maintaining their permanence (Bresser and Bishop, 1983).

Consequently, the organisation must necessarily co-evolve with others. This co-evolution process implies increased cooperation whilst nevertheless maintaining a high level of competition. Nalebuff and Branderburger (1996), adapted from Ray Noorda, the founder of the Novell company, talk about "coopetition" to stress the importance of the combination of the two antagonisms within a same process.

The "coopetition" concept has recently been developed within business ecosystem dynamics, along with the "co-evolution" concept (Moore, 1993). Bengtsson and Kock (2000), for instance, show that coopetition is the "most advantageous relationship between competitors", and, at the same time, "the most complex".

This concept also makes it easier to understand how competitors may become precious partners and how companies can play very different roles depending on the context (Nalebuff and Branderburger, 1996). Thus, a partner can suddenly be revealed to be a dangerous competitor; conversely, a long time competitor must be considered as a potential partner. Companies will then have an interest in implementing coopetition strategies in order to minimise dysfunctions and to evolve within favourable environments (Figure 2).

Figure 2: Reducing dysfunctions by integrating coopetition strategies



An interesting question is whether or not coopetition strategy can be efficient regardless of the context of the firm. With regard to the elements mentioned above, it seems necessary that the company keeps a sufficient degree of confidentiality in its actions. Thus, an excessively hostile environment would turn out to be dangerous if such a strategy were implemented. On the contrary, an excessively co-operative environment would reject a company that combines competition and co-operation strategies simultaneously. Consequently, it seems necessary to develop these coopetition strategies within a favourable context, and that context must be identified.

1.4. Business ecosystems as a favourable context for coopetition strategies

Lengnick-Hall and Wolff (1999) consider that business ecosystems are an important theoretical stream for analysing business strategies. Indeed, business strategies are developing new forms: "A company can be viewed not as a member of a single industry but as part of a business ecosystem that crosses a variety of industries" Moore (1993). We thus talk about business ecosystems to designate complex and heterogeneous networks often linked to new technology but that can be also found in more traditional industries (Moore, 1996). For example, business ecosystems can be found in the food industry, the car industry (Moore, 1996), the computer industry (Moore, 1996; Torrès-Blay, 2000; Gueguen, 2001), the software industry (Nguyen, 2002) and also the operating systems market (Gueguen and Torrès, 2004).

According to Moore (1993), the companies which are "innovative" must "attract resources of all sorts, drawing in capital, partners, suppliers, and customers to create cooperative networks". Moore thus implies that strategic alliance theory and virtual organisation theory are incomplete. Indeed, the events of the past 15 years, in particular in the IT industry, illustrate the limitations of traditional analysis. The company seems to be obliged to co-evolve with other companies from its environment. The co-evolution principle means that one cannot understand a company's evolution without integrating the evolution of other organisations in the same environment. This also means that within business ecosystems, innovation is less the fact of one isolated company than evolution in the same environment: "companies co-evolve capabilities around a new innovation: they work cooperatively and competitively to support new products, satisfy customer needs, and eventually incorporate the next round of innovations" (Moore, 1993).

Consequently, Gueguen and Torrès (2004) identify the following characteristics as key components within business ecosystems:

- A standard, norm or know –how is used by several companies. This will make it possible to develop one or several central skills.
- Companies using these skills will form a strategic destiny community based on the co-evolution principle.
- One (or several) companies will play the role of leader. This company will have to develop a shared vision among the members of the business ecosystems. Based on critical and embedded contributions (Moore, 1996), the leader's power will make it possible to pilot evolution in the central skill. The leader's place can evolve and its behaviour is primordial within the evolution of the business ecosystem.
- The key players that make up business ecosystems are heterogeneous (companies, institutions, syndicates, lobbies and so on).
- The players in a business ecosystem come from a variety of industries. There is a convergence of these industries.
- There is no exclusive sense of belonging to a unique business ecosystem.
- Business ecosystems have competitive pressures on the intra-ecosystem level (taking over leadership) as well as on the inter-ecosystems level (competition between several business ecosystems). A business ecosystem mixes co-operation and competition strategies, which corresponds to the coopetition strategy.

The co-evolution process within business ecosystems implies more cooperation and at the same time a high level of competition (Moore, 1996). Depending on the course of events, companies are thus obliged to play the role of partners, clients or competitors regarding the other companies in the ecosystem. Depending on the context, it is important for competing companies to share their complementary assets. Each company can gain benefits from the assets of other companies: grouping together complementary assets creates considerably more synergy for all the companies involved.

This type of perspective is complementary to the analyses conducted on organisational field in the neo-institutionalist theory (di Maggio and Powell, 1983; Greenwood *and al.*, 2002) and which are mobilised in strategic management. Nevertheless, the perspective evoked will make it possible to break down the organisational fields into organised competitive subsystems. In addition, the idea that a company can activate and structure a business ecosystem in order to improve its competitive position becomes the heart of the matter. The business strategy will thus consist in developing the business ecosystem by creating an inter-connected network of more or less dense partnership relationships.

This is more the "logic" of a business ecosystem than "strategy". Effectively, the perspective of business ecosystems can be imagined in terms of a double analysis:
- A deterministic analysis: the company will evolve within the relational network of strategies with variable characteristics. This relational network of strategies can be imposed on the company without it seeking to participate actively. It is for this reason that it can be considered that all companies belong to at least one business ecosystem. Certain ecosystems nevertheless bear more fruit than others.
- A voluntarist analysis: it is in this perspective that the concept of business ecosystem can be envisaged as a strategy. The company will modify its environment in order to structure a set of relationships with multiple key players. The aim of the strategy implemented will be to take up a central position and to adopt a leadership strategy. We insist on the fact that this network is not totally formalised with direct partners. The company will create a set of "weak" links, just as individuals do in order to build up their share capital (Granovetter, 1973). This perspective makes it possible to differentiate between the concept of business ecosystem and that of corporate network, which is more focused on "strong" links. We retain more the concept of strategic network the "ecosystemic" translation of the inidividual social network.

The concept of business ecosystem can thus seem to be a synthesis or intermediary stage between the concepts of "organisational field" and "business network". The example of SAP shows the collaborative importance of a leading company, which comes close to the concept of business network. But its development goes further than the mere periphery of activity of the business network. The implementation of its "business model" is spreading gradually to all the key players in the ERP sector, and has even spilled over into other heterogenous companies. The concept of business ecosystem, however, is different from that of the organisational field as it is based on a set of operating rules (Gueguen and Torrès, 2004) that are particularly aimed at the dynamics of co-evolution (convergence of industries, importance of leadership, development of shared resources, "co-opetitive" alternance and so on).

II . AN EXAMPLE OF CO-OPERATIVE AND COOPETITIVE STRATEGIES WITHIN A BUSINESS ECOSYSTEM: THE CASE OF SAP

The case of SAP seems to correspond perfectly to the framework defined in the first part of this paper: it illustrates the perfect integration of co-operation and coopetitive strategies within a business ecosystem. Indeed, the innovation that SAP has introduced from 1972 (when the company was created) to the present day does not differ much from that of its competitors; it lies more in the specific alliances formed within its business ecosystem (initially defined by its products).

Analysis of the SAP case was conducted by means of a classic methodology for case studies (Yin, 1989): the use of primary and secondary data. Primary data came from forthy four semi-directive interviews (SAP managers plus managers from consultancy companies: Bearing Point, PricewaterhouseCoopers, and Cap Gemini). Secondary data came from a review of the press between 1989 and 2002, internal communication reviews, and internal documents collected in the field.

2.1. SAP

SAP develops and sells ERP (*Enterprise Resource Planning*) software. ERP software first appeared in the late eighties and has gone to the heart of evolution in corporate

information systems. ERP can be defined as a software application composed of several sub-modules, the aim of which is to manage all company functions. This software is still in the growth stage in various industries. ERP editors are key players in the computer industry. The five main software editors, and their respective products, are: SAP and "R/3", Oracle and "Oracle Application", Baan and "Baan IV", PeopleSoft and "PeopleSoft", and JD Edwards and "One World".

SAP was founded in 1972 by five former IBM engineers. It is the third biggest independent software company and the leader in the ERP industry. SAP employs 27,800 people in more than fifty countries. The SAP software now has 12 million users, 44,500 installations, 1,000 partners, and 17,500 clients in more than 120 countries. SAP is also the first global provider of e-business software.

2.2. Innovative products

If one refers to the main determinants of business ecosystems (Moore, 1993 ; 1996), the success of a company essentially lies in its capacity to "innovate". This above all means the company's capacity to create new products or services. One of the SAP's first strategies was precisely that: the creation of "innovative" products. To do this, SAP invested in research and development to provide integrated systems. Thus, at the worldwide level, there are several research centres employing around 1,000 people to develop applications. These research centres are organised by country and by function. Engineers work with functional experts from all over the world in order to define better-adapted solutions. To maintain the high level in the research centres, the engineers undergo a strict selection process and are highly motivated.

SAP has been successful since the early eighties in Germany, first with an ERP offer which, for the first time, made it possible to integrate all the functions of a company. In parallel, SAP developed functional process solutions: supply chain, customer relationship management and so on. SAP products have nevertheless also faced some setbacks and have had some failures. SAP has often been the subject of violent criticism regarding its products. Now, though, in spite of criticism and in spite of new competitors, SAP still remains the leader.

2.3. Business ecosystem development: co-operation and coopetition strategies

Innovation and the ability to anticipate technological change were the basis of SAP's success. Nevertheless, the failure of some products shows that the ability to create new products is not enough to consolidate the emerging business ecosystem, nor to maintain leadership. Companies that succeed are ones that innovate, although innovation does not only mean the creation of new products or services (Moore, 1993). To grow, firms must make allies with others in order to create more value. Companies must therefore build economic communities based on inter-company synergy (Moore, 1996).

The directors of SAP soon understood the value of co-operating with several partners in order to create their business ecosystem. Thus, SAP's innovation mainly consisted in its choice of alliance, which still depends on three different types of partnership: client partnerships (vertical relationships), transversal partnerships with companies from different industries (transversal relationships), and alliances with competitors (horizontal relationships). Thus relationships based on co-operation and competition form the SAP business ecosystem development strategy and constitute an innovative business model.

2.3.1. Vertical relationships: cooperation based on co-development

The nature of the partnerships within the SAP business ecosystem changed over time: first, SAP focused on establishing strong relationships with its clients; secondly, SAP strengthened its alliances with companies from other industries; finally, once SAP had sufficient foundations, it built alliances with rival companies. Thus, competition relationships started to develop in the mid-nineties, whereas co-operation relationships were being strengthened from the very creation of the company. Competition strategies have not brought into question the alliances with traditional partners (such as clients and providers), who are still present in SAP's global strategy.

Since the beginning, SAP has collaborated very closely with its clients, which has helped keep them loyal as well as to obtain new market shares. For instance, clients were asked to talk about their implementation projects in specialised magazines and forums. In this way, SAP was able to create strong synergies between its foremost clients and new prospects.

This strategy proved all the more efficient as it was supported by other actions aimed at developing this client network. For instance, at the end of the 1980s, SAP created a subsidiary specialised in training in order to answer the needs of their clients and partners, but also to make them become even more dependent on their services and products. The courses were in some cases combined with partner programmes. Thus, in the mid-nineties, a great number of consulting firms (such as the Big Five) were offering their clients and consultants "SAP Universities". Establishing new synergy within the business ecosystem (such as creating the "SAP certification" quality label) has enabled SAP to earn large benefits and further consolidate its links with its clients.

Moreover, crossed investments between SAP and its clients have contributed to the firm's development. Indeed, massive investments on both sides helped to create long-term partnerships. In the case of Shell for instance, the partnership has lasted for more than fifteen years: SAP consultants work full time on implementing and developing specific solutions for the Shell group. SAP is also Nestlé's main provider for the Globe project, the biggest information system project in the world. The project, which consists in implementing SAP R/3 and harmonising all Nestlé's subsidiaries throughout the world, will cost several million Euros and will last between five and ten years. With regard to this project, Nestlé will co-finance part of SAP's generic developments (those which can potentially be used by the software provider for other clients, even rival ones).

2.3.2. Transversal relationships: consolidating SAP's technological standards with different players

Transversal partnerships have also been introduced within the SAP business ecosystem since the beginning of the eighties and continue today. For example, SAP has built up partnerships with Microsoft, Hewlett Packard, Informix etc. In 2001, SAP launched a "global partnership" to create a network in the e-business market by offering services to its partners. This partnership makes it possible to keep the entrance requirements for the network at a very high level. In other words, this partnership allows SAP to "maintain high barriers to entry to prevent innovators from building alternative ecosystems" (Moore, 1993).

It therefore appears that SAP considers relationships to be a key component of its development. The structure of SAP's business ecosystem and the implementation of co-operation strategies depends on the multiplicity of the potential players in order to provide the most complete offer: "The S*AP Markets Partnership Programme was designed to create stable and profitable alliances for our partners and clients. With this programme, we have formalised our partnership process in order to ensure that each partner receives the products, services and support necessary for success. It will result in a powerful ecosystem as the programme provides our clients with complete and flexible market place solutions*" (an SAP manager).

2.3.3. Horizontal relationships: integration of competitor partnerships by means of coopetition

SAP also built up partnerships with competitors such as consultancy firms, which are competitors in the consultancy and information system implementation market. These alliances were crucial to SAP's development. Effectively, at the outset, SAP did not benefit from a broad enough structure to distribute its products. SAP thus knew how to make use of the enormous potential of its competitors in terms of manpower and distribution infrastructures. The reservoirs of skills that these companies represented was a golden opportunity for SAP.

Concurrently, SAP provides its partners with commercial support during the sales process and during the project implementation process. For example, SAP sets up a co-marketing programme with its distributors financing 50% of the operations. These service companies are direct competitors of SAP for two reasons: first, because services companies can offer rival integrated software, and secondly, the ERP software implementation activity enters into competition with SAP's consultancy division. In spite of these competitive links, the partnerships with these firms represent a huge competitive advantage for SAP. Indeed, since the begginning of the 1990's, most IT service firms (such as the Big Six) have been able to propose SAP solutions to their customers. Moreover, in some small services companies SAP has succeeded in imposing exclusiveness concerning ERP implementations.

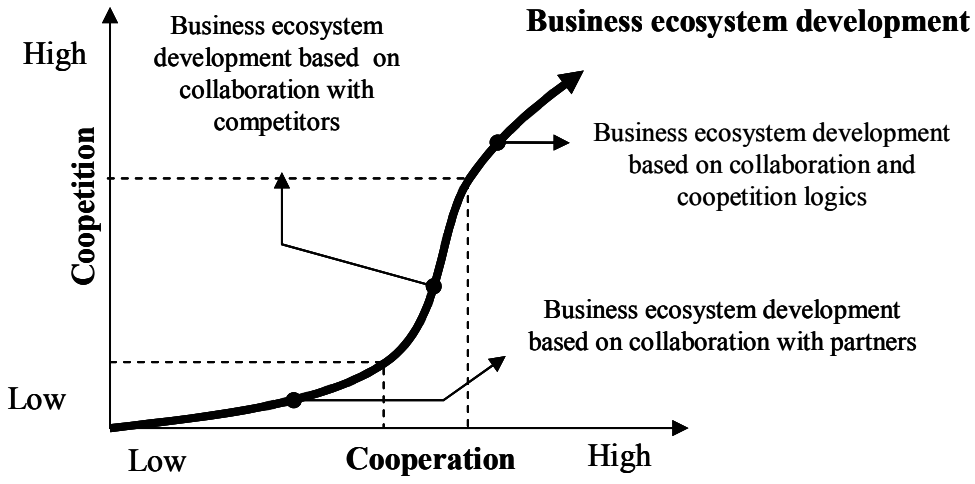
SAP has also implemented coopetition strategies with some competing software editors. The partnership with Oracle for instance represents another crucial coopetition

relationship within the SAP business ecosystem. Oracle is a direct rival on the ERP market (with *Oracle Applications*), yet, SAP and Oracle have worked together since Oracle became SAP's official database provider for its software.

These various elements allow us to understand the basis for how SAP's business ecosystem was created. There are many, varied partners sharing the same technological standard and they are united in the same strategic destiny community based on the principles of co-evolution. Moreover, SAP has known how to use co-operation strategies with its clients and external companies, whilst simultaneously maintaining coopetition strategies with its competitors.

It is because SAP has a business ecosystem composed of various players (clients, providers, other companies or institutions, certification), that it was possible to implement coopetition strategies. SAP's technology is starting to become essential. Competitors like Andersen Consulting, which had its own software, have had to integrate this technological standard into their offer in order to attract the attention of a larger population. This sequence of co-operation and coopetition periods can be represented in Figure 3. The development of the business ecosystem initially takes place via the springboard of co-operation strategies. Then, a new dynamic is created through the use of coopetition strategies. In the third step, the two types of strategy simultaneously contribute to the development of the business ecosystem.

Figure 3: Business ecosystems: collective and coopetitive logics

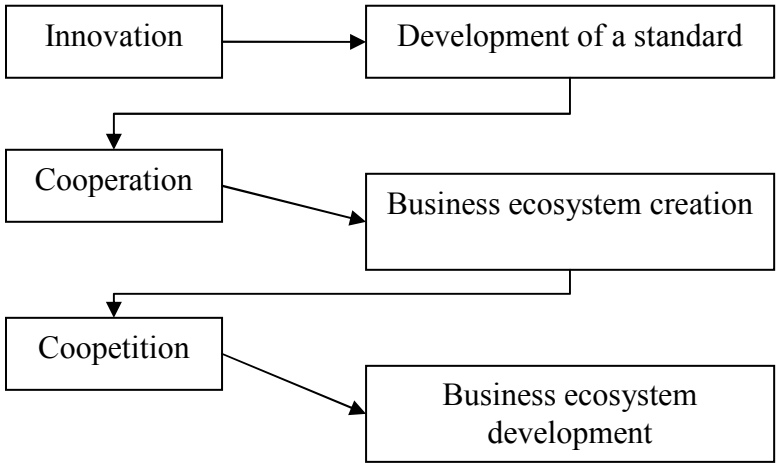


Conclusion and implications

Alternating purely competitive and purely co-operative strategies seems to have its limitations. Competition strategies emerge and underline the need to overwhelm the theoretical framework of conventional approaches. Nevertheless, in order to implement them successfully, a favourable context is required. The creation of a business ecosystem seems propitious. SAP knew how to take advantage of its innovation and collaboration with partners to establish its technological standard. Once the foundations of its business ecosystem had been established, SAP could work and collaborate with competitors and thus adopt competition strategies. The benefits of the competitors reinforced the permanence of the business ecosystem (Figure 4).

Thus, as a complement to the competitive advantages, the business ecosystem offers an interesting alternative by underlining that organisation relationships are crucial skills.

Figure 4: Business ecosystem creation and development



This cycle is not stable. The business ecosystem must be understood in the perspective of an unstable equilibrium (Stanley, 1999). It is precisely because the company is in motion that it reaches this equilibrium. Moreover, the transposition of this statement to a more quantitative perspective seems necessary. The initial objective of this research was to discover the complementarity between competition, co-operation and coopetition in the constitution of a business ecosystem.

An analysis based on the measurement of actions and on their diachronicity would make it possible to validate the theory put forward. In other respects, the use of business ecosystems for IT companies, which are transversal by nature (Sampler, 1998), limits its scope. It would be interesting in research terms to include companies from different industries, as Moore tried to do (Moore, 1996).

The core implication of this research is to consider the importance of collaborating with your competitors. Coopetition seems to have been SAP's key to success. We thus encourage managers to consider their competitors not only as "enemies", but also as potential allies. The development of coopetition strategies will only be effective, however, once the company has learnt to adopt a more global strategy that makes it possible to encourage alliances with the competition. It is thus the logic of the business ecosystem that will have all its importance here.

The manager must thus develop his strategy as part of a global logic that is not directly associated with the short term. It is important to take into account that the company must evolve within an environment composed of weak links, to use the concept described by Mark Granovetter (1973). Effectively, the perspective of business ecosystems corresponds to the idea that non formalised, non direct relationships are of crucial interest for the company's development. The case of the success of SAP perfectly illustrates this perspective.

In addition, managers must not necessarily seek out close collaboration with their competitors immediately (coopetition logic). We effectively believe that seeking out profitable relationships with competitors is truly worthwhile when the company has succeeded in developing a collaboration unit with non rival companies. This creation of a "propitious field" for coopetition will be the guarantee for success. Rival companies will find it beneficial to collaborate with a partner well-placed in a network of multiple relationships. Analysis of the SAP business ecosystem shows us the importance of chronological evolution in the various phases of cooperation and coopetition (Figure 3).

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Appendix A: Methodology

1. Study of a single case.

The study of a single case, that of the company SAP and the ERP market, has appeared as a pertinent methodological option for studying complex and dynamic phenomena (Eisenhardt, 1989; Yin, 1989).

The case study covers the period from 1979 to 2004, corresponding to the phases of rapid growth, development and maturity in the ERP market and, in parallel, in the company SAP. Data was collected using a qualitative methodology on the basis of semi-directive interviews. We then performed a thematic contents analysis using the methodology recommended by Miles and Huberman (1994).

2. Collecting data.

Primary data collection gave rise to a series of interviews conducted in-depth with different key players from the sector. Between September 2003 and December 2004 a total of 44 semi-directive interviews of between 1 and 3 hours were conducted with directors of alliances, directors, project managers and consultants, experts in the sector and so on from the field of ERP and services (see Table A).

Table A: Sample of the interviewees

Managers interviewed per company	Interviews
Computer service sector companies	8
Information system and management consultancy sector companies	7
ERP sector companies	7
Software sector companies	4
Other IT sector companies	5

Professional associations and unions	6
Institutions and public authorities	4
Experts in the sector	3
Total	**44**

Several interview guides, each composed exclusively of open questions, were designed in relation to the progress made in the reflections and the category of the interviewees. We occasionally explained certain terms or broadened our interview guide in order to adapt to the centres of interest of the interviewee, whilst simultaneously keeping our research questions in perspective.

The sample of interviewees (Table A) was built up in the course of the field inquiry in relation to the opportunities that became available and in respect of two principles:
- the diversification in points of view by alternating the types of organisation and hierarchical levels;
- the principle of the saturation of information on the different themes covered.

3. Structured Content Analysis.
Once the data had been collected, it was fully retranscribed and then underwent a thematic analysis (Miles and Huberman, 1994). The content analysis was performed in several stages: collection, coding by thematic analysis, categorisation and interpretation. As the data collected were statements made during semi-directive interviews, the data analysis method used was a discourse analysis, based on the analysis of the thematic content.

Peripheral knowledge of the case was enriched by collecting and processing secondary data: articles from the specialised professional press and public documents (reports and studies by experts and business annual reports). In addition to the input of figures to bolster the argument, the secondary data reinforced the internal validity of the results by satisfying the aim to triangulate the sources.

Appendix B: The choice of the case of SAP

Our research focuses on the case of the company SAP because, in our opinion, it seemed to be an exemplary case in many respects.

Firstly, SAP has been the uncontested leader in the ERP field since creating its first ERP in 1979 (SAP was created in 1972). SAP was also the first company to have developed and marketed an ERP. In addition, this German company managed to maintain its leadership from the outset, despite competition from American giants such as Oracle or Microsoft. In 2005, SAP still has a genuine headstart in relation to its rivals as it has 33% of the world market share for ERP and its main rival, Oracle, only 17%.

Secondly, SAP created a new market, the ERP market, from nothing. In economic terms, this sector is perhaps the largest on the world software market (Campbell-Kelly, 2003).
Finally, the SAP ecosystem is a recognised reality in the sector. It is the first time that an editor of applicative solutions has had such a hold on the other key players in the game.