COOPETITIVE SUPPLY CHAINS: TOWARD A SOCIAL TIES PERSPECTIVE

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This research note examines the impact of information systems on the spreading of collaborative logistical practices between rival companies in the same market. Numerous pooling experiments are conducted, in France particularly, that lead manufacturers to voluntarily share resources and logistical activities. A large number of academic works highlights the main aspects of logistical collaborative strategies though emphasis is on the part played by information systems. It is at least as important to understand how competing companies will collaborate to implement a shared information system, even if it means disseminating strategic and confidential data outside their premises. This research note suggests widening the analysis by pointing out that the success of coopetitive strategies in supply chain networks also implies the weaving of powerful social ties between decision makers.

1. INTRODUCTION

Since the mid-2000s, supply chains have become supply chain networks governed by activity and resource pooling behaviors between companies that can end up as competitors in the same market. This development refers to two essential issues: logistical integration (Paulraj and Chen, 2007), and coopetition relationships (Kotzab and Teller, 2003). The merging of supply chains into networks combines vertical and horizontal inter-organizational dimensions to ensure the continuity and fluidity of physical flows, from suppliers to consumers. In addition, the management of coopetitive

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relationships enables rival companies to work together by balancing cooperative and competitive behaviors (Brandenburger and Nalebuff, 1996). According to Ritala and Hurmelinna-Laukkanen (2013:154), we will define coopetition as "*a relationship in which competing firms first cooperate with each other to jointly create value and a bigger market, and then individually compete for the created value*".

The lasting nature of such emerging patterns, where direct competitors in a given market collaborate durably in logistical matters, now interests both professionals and scholars. Existing theoretical contributions do not really explain under what conditions pooling approaches arise between competitors. If "why" seems to be the subject of a number of works, "how" remains particularly obscure to this day. This research note wishes to highlight the importance of information system (IS) in the integration of supply chains, and in the spreading of collaborative logistical practices between direct competitors. In other words, we would like to underline the part played by IS in the formulation and management of coopetition strategies. As Požgaj et al. (2007:67-68) underline, "*from typical business support in past years, IS has become the main business driver and basic enterprise foundation*". The originality here is to underline that the IS should be examined both from a monologic perspective and a dialogic perspective, in other words by looking into verbal (and non-verbal) interactions between individuals that determine the efficient functioning of a coopetitive supply chain.

If several companies embark on collaborative projects with competitors, it is without doubt because their decision-makers maintain a favorable relationship climate due to powerful social ties (seen as information-carrying connections between people inside social networks). This is a fact relatively little known and studied, even if a line of research tends to appear from the studies of Brookes and Singh (2008), Borgatti and Li (2009), Galaskiewicz (2011), Gligor and Autry (2012) or Yim and Leem (2013). In his recent research, George (2013) emphasizes the importance of the effect of *embeddedness* generated by a network of personal relationships between individuals belonging to different companies of the same supply chain. As for us, we would like to highlight the part played by IS in the dissemination of coopetitive strategies within supply chain networks. The dimensions examined relate to the integration of supply chains and coopetition. This research note first tries to understand how IS can bring answers to issues raised by the integration of supply chains before identify the links existing with coopetitive strategies. Finally, we widen the analysis by pointing out

that, for increased efficiency, coopetitive strategies require the understanding of the formalized social ties between decision makers.

On a conceptual level, this research note wishes to contribute to a better understanding of coopetitive supply chains by basing itself on the organization of a certain number of studies on the theme. The aim is of an exploratory nature; it consists of identifying strategic behaviors by highlighting the roles played by individuals in the decision-making process, and by clarifying new research avenues. The most advanced approaches in terms of supply chain management start by integrating the importance of social ties in order to understand how business relationships develop. It consists of showing to what extent strong or weak ties inside coopetitive supply chains influence the information exchange between actors and result in constraints or opportunities for strategic choices (Todeva, 2006). To argue the various points in the research note, we use illustrations, whose function is not demonstrative but only illustrative of weak signals currently emerging[1].

2. SUPPLY CHAIN INTEGRATION

Zouaghi and Spalanzani (2010:3-4) define a supply chain as "*a hierarchic and dynamic network with processes, made of a set of companies from the first supplier to the final customer, linked by upstream and downstream flows (physical, information, financial and knowledge flows) and by relationships at various levels, and formed in order to satisfy customers through better coordination and integration, and also through greater flexibility and reactivity*". The interest for supply chains is directly due to vertical disintegration policies, associated with outsourcing approaches launched as early as the 1980s. Outsourcing leads to asking the question of supply chain integration (Dumoulin et al., 2000), so as to ensure a maximum supply chain continuity and improved control. Companies must try to adhere to supply chain management principles if they want to form a coherent whole when in close interaction but legally independent. The supply chain integration has the advantage of facilitating the transfer of knowledge between supply chain members (Nagati and Rebolledo, 2013), which eases the joint research for efficient solutions in order to face potential external shocks.

In any supply chain, the efficient directing of physical flows – for the right products to reach the right place at the right time in sufficient

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quantities – is associated with a sophisticated management of information flows. The perfect connection of companies between themselves (Min and Zou, 2002; Coyle et al., 2008; Christopher, 2011), particularly at IS level, appears as an absolute necessity for a smooth and continuous flow circulation. It is no longer the case of optimizing flows inside one organization, but flows between organizations (Lambert and Cooper, 2000; Mentzer et al., 2001). Supply chain integration at inter-organizational level is increasingly studied, as it is complex and worthwhile for supply chain members, inside inbound and outbound logistics: third party logistics providers, suppliers, manufacturers, retailers, and distributors (see Figure 1). Major studies bear on integration characteristics, stakes, key factors of success and the role of IS.

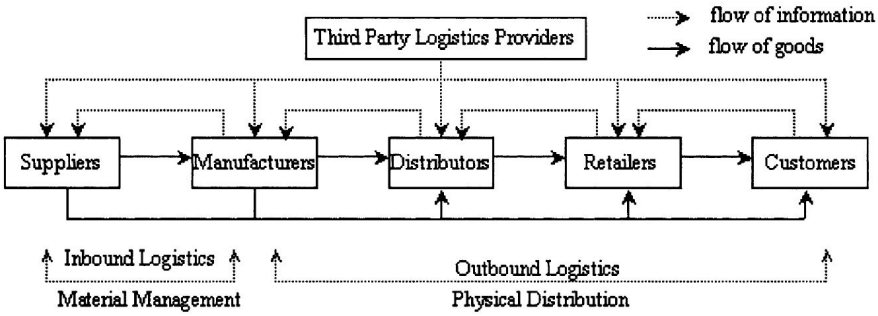

Figure 1. The supply chain members

Source: Min and Zou (2002:232)

Integration characteristics vary depending on integration extent and the elements integrated. Fabbe-Costes (2007) distinguishes five levels: inter-organizational integration, limited inter-organizational integration, extended inter-organizational integration, integration between supply chains (also called "network"), and societal integration. This author points out the existence of four interdependent integration layers: flows (physical, information and financial); processes and activities; systems and technologies; players (as organizations). The issues of integration are mainly to overcome the scattering of the partners' activities (production, storage, distribution), to erase the time gap, to ensure flow smoothness and continuity (Paulraj and Chen, 2007) and finally to limit operational malfunctions (costs, delayed deliveries, stock-outs), that have a noxious effect on customer satisfaction.

To take up the challenge of logistical integration, several essential elements are needed: IS implementation, coordination, management's involvement, organizational factors and the nature of relationships between players. Walmart is, undoubtedly, one of the best-known examples of supply chain integration; they base themselves on a very narrow partnership with a large number of suppliers to develop a quick response system. In this precise case, like many others, IS implementation becomes a powerful tool for coherence making up for disseminated logistics. The extent to which physical flows are steered by information flows necessitates IS be interconnected amongst different supply chain members. An IS is an organized set of resources to acquire, process, and store information in and between organizations (Reix et al., 2011). For Reix et al. (2011), IS has an information, technological and organizational dimension. In an inter-organizational context, the major feature of IS is to be involved in the sharing and processing of data from different organization. In brief, supply chain collaboration needs *communication* and *joint knowledge creation* to be efficient (Cao and Zhang, 2013).

For all elements to operate as a whole, it is essential to manage tensions between supply chain members and overcome communication barriers associated with physical, economical, strategic and social criteria. Conflicts, opportunist behaviors, the lack of trust and sharing of a common framework, information asymmetry and the lack of a physical structure to collaborate will limit the scope of supply chain integration. In this context, IS represents an operational challenge when allowing the whole to be operational, and a strategic challenge when allowing coopetitive networks members to work together (Reix et al., 2011). As an element of logistical management, IS appears as instruments, i.e. functions to perform, and also as a model, i.e. a structure to organize. And as a construction, it offers both a space representation (organization of activities) and a time representation (management history) of supply chains. This construction has an "organizing" potential, which will supply a framework to ago-antagonistic inter-organizational relationships.

3. COOPETITION MANAGEMENT

A number of authors, e.g. Bengtsson and Kock (2000), Kotzab and Teller (2003), and Osarenkhoe (2010), stress the existence of powerful coopetition approaches in supply chains. Competing companies may cooperate to carry out given logistical activities (production, purchasing, distribution), while remaining competitors in the same market: "*rivals will try to separate each*

logic of interaction by restricting cooperation to upstream areas of the supply chain, while competition dominates in activities closer to the end customer" (Wilhem, 2011:665). Bengtsson and Kock (2000) define coopetition as a dyadic and paradoxical relationship arising when two companies cooperate in some activities and compete in others at the same time (see Figure 2). Dagnino and Padula (2002) differentiate dyadic coopetition from network coopetition when coopetition relationships involve several companies at the same time; a dyadic coopetition would exist between Coca Cola and Pepsi Cola, if they shared the same can supplier, while a network coopetition associates four or five large retailers involved in the functioning of the same warehouse managed by a third party logistics provider.

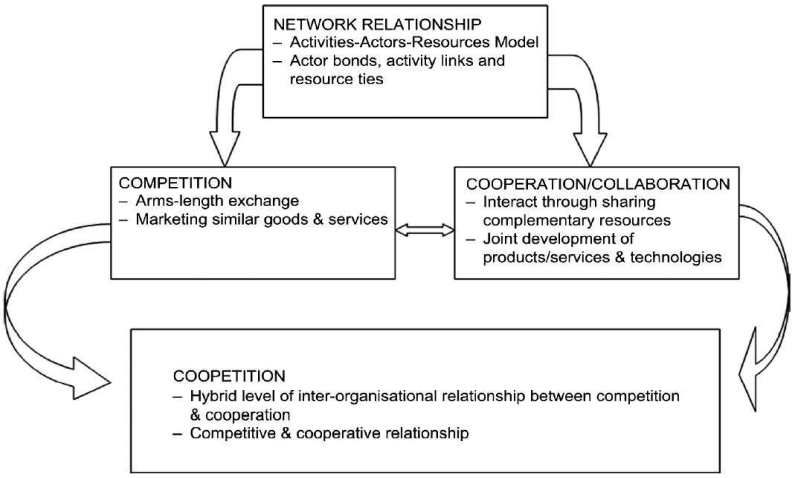

Figure 2. Inter-firm dynamics between competition and cooperation

Source: Osarenkhoe (2010:215)

Coopetitive strategy benefiting from the advantages of both cooperation and competition (Bengtsson and Kock, 2000; Dagnino et al., 2007), provided competitive and cooperative behaviors are adopted at the same time. For example, the automobile industry is very sensitive to the economy of scale phenomena, and the pooling of resources between companies can rapidly translate into a strong decrease of unit costs. These companies remain in competition with an ever more demanding consumer. This cooperation and competition ago-antagonistic relationship gives a paradoxical nature to coopetition (Dagnino et al., 2007), and presents a number of risks to competitors. The major risks are associated with individual/collective

conflicts of interest (knowledge sharing, sharing of gains and losses), access to strategic data for competitors and opportunistic behaviors from all parties (Gnyawali and Park, 2009). Another main risk is to be unable to secure access to resources or capabilities that firms do not possess (Wood, 2012).

The risks of coopetition are inherent to the nature of the strategy. In the case of excessive cooperation, agreement would be damaging, and in the case of excessive competition, the intensity of conflicts would cancel all potential advantages of the said strategy. For example, an excessive cooperation can lead partners to settle for managing a given situation, with no call for innovation to improve the results obtained. Risks lie in an excessive application of one of these approaches, as this would end up in either pure cooperation, or pure competition, which is in contradiction with the strategy. The management of tensions between competitors is a determining element, but provided the intensity of competition is not reduced. This is why the success of coopetition relies on a subtle management of interdependencies between competitors in order to achieve a balance between cooperation and competition, and thus achieve the expected objectives. In brief, the cooperative dimension refers to collective actions by supply chain members to pursue common interests, and the competitive dimension refers to an individual action designed to achieve private gains (Kim et al., 2013). The difficulty consists in the capacity of maintaining the dynamic balance between the two opposite strengths.

The academic literature identifies three modes of management in coopetition supply networks all of which separate cooperative behaviors from competitive behaviors (Bengtsson and Kock, 2000; Dumez and Jeunemaître, 2006; Yami and Le Roy, 2010; Bouncken and Fredrich, 2012; Ritala and Hurmelinna-Laukkanen, 2013). The first mode of management is sequential interdependence, or a temporal separation of cooperation and competition (for example, a brief competitive episode marked by a conflict of interest, in the middle of a long period of cooperation between two partners). The second mode is direct interdependence among competitors, cooperation and competition being functionally separated (different functions and activities) or separated in space (different geographical areas). The third and last management mode is indirect interdependence where the cooperative aspect of management is entrusted to a neutral third party, for example the third party logistics provider introduced in Figure 1. The intermediation role played by third party logistics in coopetition management was studied recently by Hiesse et al. (2011). This is explained by the fact that the third party logistics provider establishes relationships with a certain number of buyers and sellers

(see Figure 3). Yet, the buyers or sellers can be direct rivals on a given market while using the services of an identical third party logistics provider (Bask, 2001).

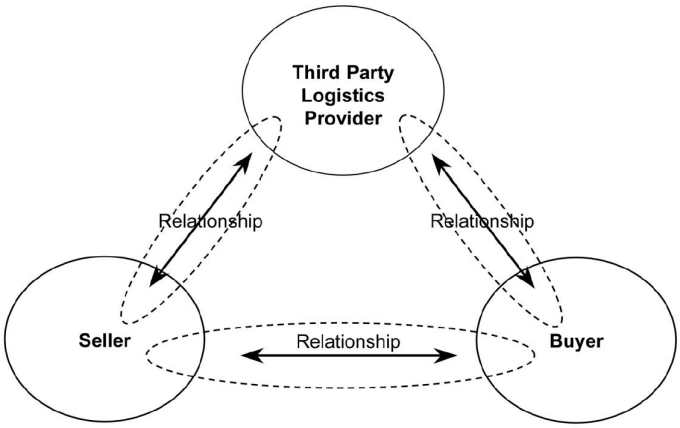

Figure 3. Three dyadic relationships among seller, buyer and third-party logistics provider

Source: Bask (2001:473)

Organizational factors such as supervising, the socialization process, commitment, the nature of relationships, the communication mode and IS, will improve coordination and reduce potential conflicts (Kotzab and Teller, 2003). The issues of knowledge sharing and coordination modes are also important (Levy et al., 2003). In parallel, structural factors such as the alliance design and management condition the nature of benefits and risks; rules shape and organize relationships between individuals, and the implementation of standards and processes allow the sharing of a corporate vision (Kotzab and Teller, 2003). Information, and particularly its exchange and sharing between supply chain members, seems to represent a significant part of coopetition relationship management. Information has a dual character as it sustains both individual behaviors (information secrecy) and collective behaviors (information exchange). The implementation of IS between competing companies must take into account the dialectics between confidential individual information and shared collective information, that is to say, alternate between opacity and transparency.

4. AN EMERGENT ANALYSIS FROM SOCIAL TIES

The dual character of logistical information leads to wondering whether IS may integrate both cooperative and competitive behaviors. Hence, an examination of the role of IS within coopetition strategies in supply chains is warranted. In other words, what is the place of IS in the formulation of coopetition strategies in supply chains, and can they contribute to the management of the paradoxical nature of coopetition? This is the issue supporting De Corbière et al.'s (2010) research. In their view, the quality of the data fed into IS has a direct impact on a possible pooling of logistical resources, its extent and its dissemination speed. If such questioning is legitimate, it minimizes inter-personal communication between individuals in order to efficiently drive coopetitive strategies. Indeed, the functioning of a supply chain is not based only on monologic information, using binary data allowing setting off the logistical operations (for example, bar-codes). On the contrary, to facilitate mutual exchanges between organizations, dialogic information is essential. It is based on the verbal exchanges of different nature enabling harmonious solutions to arise, in particular when experiencing temporary difficulties: the frequent interactions between supply chain members "*enable the development of a common language and a shared mental model, thus assisting the smooth exchange and effective integration of complementary resources, information, and knowledge*" (Chiu et al., 2008:7).

The social ties existing between decision makers in each of the companies involved will certainly have a positive impact on the implementation of a shared logistical project, even if decision makers have to report first to their own respective companies (and particularly their shareholders). The desire to develop a collaborative project with a competitor, for example take part in a shared pool of suppliers, means that individuals are going to commit themselves to an organizational decision in the long term. They hence also commit to a *rapprochement* process with competitors which is made easier when they belong to the same social networks, such as the old students' associations of business schools. In brief, it is crucial to investigate the relations among a group of actors using the fundamentals of social network analysis; they are particularly suitable "*for studying how patterns of inter-firm relationships in a supply network translate to competitive advantages through management of materials movement and diffusion of information*" (Kim et al., 2011:194).

Two major questions emerge: (1) what is the role of the social network in the strategic decision making process of coopetition; and (2) how can social

networks be involved in the management of paradoxes induced by coopetition? In a recent contribution, Hiesse and Paché (2010) investigated the recent logistical pooling practices between competing suppliers (manufacturers) in the French retailing sector. Manufacturers have adopted coopetitive strategies by collaborating on logistical activities while competing in the market in front of the final consumer. The investigation is based on an exploratory case study with data collected from 15 semi-structured interviews conducted with manufacturers, third-party logistics providers and consultants involved in pooling practices. The findings underline the influence of the social networks on the emergence of coopetitive networks and on the nature of the social processes induced (i.e. allowing connections between members, modes of coordination, and modes of control). It is thus possible to see that social ties impact the success or failure of the emergence of coopetitive strategies. Collaboration between competitors can be facilitated or inhibited by the sharing process of previous experiences between potential members of the network such as common careers, trainings, or meetings through associations of professionals.

Furthermore, social ties support the creation of trustful relationships between competitors, reducing the risks of opportunistic behaviors as well; trust becomes a coordination and control mode to improve the management of interdependencies between competitors. Of course, social ties can play this role only for strong ties, based on relationships between people interacting frequently in order to execute a given activity. The balance of the coopetitive relationship can be disturbed by internal factors (opportunism) or by external factors (a new member). Social ties can thus help the partners to maintain the balance. Pre-existing social ties between members of the network influence the way the competitors interact in their daily business transactions. As Carter et al. (2007:154) note in their social network analysis applied to supply chains, "*a buyer-supplier dyad that is centrally located within a network of alliances might have lower levels of opportunistic behavior, due to greater information flow and transparency, and because reputational effects might be magnified for more centrally-located dyads*". A recent research driven in the USA demonstrates that personal relationships impact directly on the manner the decision makers communicate together, and, as a consequence, the companies' business performance (Gligor and Autry, 2012).

In a research program, we can promote two different insights: the role of the social ties in the emergence and management of coopetitive strategies within supply chains; the importance of the social dimension as any other economical or relational dimension to explain the efficiency of coopetitive networks. To expand on Reix et al.'s (2011) reflections, it seems interesting to

position the understanding of coopetition into an iterative pattern stabilized by the construction of IS to direct inter-organizational relationships. This structure is over-determined by the behaviors of individuals who, in their turn, can adjust the IS; the approach must be considered as iterative, as it has to take the social ties connecting decision makers into account. To analyze the coopetitive supply chains in a pertinent manner, it has been found necessary to step out of the economic paradigm, which has dominated the logistics research for many years, to refer to a behaviorist paradigm, mainly inspired by Crozier and Friedberg (1980), that compels to refer to the actor's role to understand the functioning of any organized system.

Hiesse and Paché's (2010) contribution does not ask directly how embedded supply chain activities are within a social perspective, unlike Borgatti and Li (2009), Galaskiewicz (2011) and Gligor and Autry (2012) who focus on this very issue: for them, it is essential to take into account the importance of socialization processes in the emergence and in the implementation of coopetitive strategies for managers. The socialization process, based on an interpersonal dimension, and measurable in terms of centrality and density (Brookes and Singh, 2008), appears as a critical key success factor. When social ties do not pre-exist between members, the process can be driven by a third party. This third party will facilitate the emergence and the implementation of coopetitive strategies. It opens a new field of investigation about the legitimacy of the third party. Does he/she have the necessary competences to stimulate the creation of social ties between future members? It is therefore indispensable to go beyond the conventional vision considering that IS, as they exist, are facilitators of coopetitive strategies.

5. CONCLUSION

The academic literature often privileges the analysis of IS to approach coopetitive strategies, as there is an obvious difficulty in collecting data to study coopetition relationships. Analyzing IS is a means of obtaining a representation of supply chain networks making it easier to understand exchanges between companies and particularly the coopetition management modes. IS analysis supplies much information on the players involved, the areas for cooperation and competition, management procedures, the nature and frequency of data exchanged, the coordination, decision making, reporting and cost control modes. The various management levels involved in coopetition strategies and also the presence of middlemen are easily identifiable from the examination of IS. Without ignoring this new view of

reality, the research note wishes to underline the indubitable significance of social ties in the success of coopetitive strategies in supply chain integration process. As Lee (2005:59) underlines, "*supply chain integration can be measured by the quality of the relationships between the members of the supply chain*". This is an emerging subject asking for further investigation by mobilizing other literature research fields, particularly sociology and social psychology.

Various questions remain unanswered in matters of social ties perspective applied to supply chains. The first question is whether relationships between individuals are sufficiently strong to durably orientate the companies' corporate strategies. We can imagine that social ties are simple facilitators for setting up contact during the first steps of the negotiation in a business relationship. However, it seems unlikely that social ties explain the fact that a business relationship persists over time if it does not provide the company, and in particular the shareholders, sufficient revenues over numerous years. The second question relates to the impact of a possible deterioration of social ties on the course of a corporate strategy: can feelings between individuals interfere with the functioning of a supply chain up to causing an anticipated dissolution of a business relationship? If it were the case, it would be clear that the understanding of coopetitive supply chains could not avoid the analysis of human passions, reviving Adam Smith, father of political economy, who constantly underlined how individuals make moral judgments on each other, as well as on their own attitude.

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Management, Vol. 18, 2013, 2, pp. 125-140
G. Pache: Coopetitive supply chains: Toward a social ties perspective

KOOPETIVNI LANCI NABAVE: PREMA PERSPEKTIVI DRUŠTVENIH VEZA

Sažetak

Ovo kratko istraživanje analizira utjecaj informacijskih sustava na širenje suradničke prakse u logistici između konkurenata na istom tržištu. Trenutno se izvode različiti eksperimenti, a što je posebno slučaj u Francuskoj, u kojima proizvođači dobrovoljno dijele resurse i logističke aktivnosti. Veliki broj akademskih radova ukazuje na temeljne aspekte logističkih suradničkih strategija i naglašava ulogu koju u tom aspektu imaju informacijski sustavi. Također je, u najmanjoj mjeri, potrebno razumjeti kako konkurenti mogu surađivati u uspostavi zajedničkog informacijskog sustava, iako to znači podjelu podataka strateške i povjerljive prirode. Ovo kratko istraživanje ukazuje da uspjeh koopetivnih strategija u lancu nabave također podrazumijeva uspostavu snažnih društvenih veza između donositelja odluka.