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**Inter-organisational network configurations for ski areas
innovations**

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ABSTRACT:

Unlike industrial innovations, service innovations cannot be protected by patents or designs. Thus, the implementation of innovation networks is often seen as a key to generate a sustainable competitive advantage. In this paper, we are interested in the main forms of inter-organizational networks that led to service innovations. More precisely, this article aims to examine the relationship between the characteristics of inter-organizational networks and the type of service innovation. A typology of service innovations and a network analysis framework allowed us to study the innovations implemented by two major French winter sports resorts: the *Portes du Soleil* and *Paradiski*. In total, we studied the structure of 12 innovation networks. Our results show that, depending on the type of innovation implemented, networks are different in terms of partners involved, regulation mode and geographic scope. However, regardless of the innovation developed, it seems necessary to have a central actor to orchestrate the various partners.

KEY WORDS: Innovation – Service – Inter-organizational network – Tourism – Typology

INTRODUCTION

Innovation is a powerful strategic tool for firms with high technological content, but also for service businesses (Gallouj 2002, Ordanini and Parasuraman, 2010; Mothe and Nguyen, 2012). Through innovation, service companies try to differentiate themselves from their competitors and are entitled to conquer new markets. However, service innovations are hardly patentable (Gallouj, 2002). Firms must find other ways to protect their innovations. One answer is the deployment of inter-organizational networks. Indeed, it is recognized that interfirm cooperation enables business to benefit from the complementarities of their partners, to achieve economies of scale (Calia, Guerrini and Moura, 2007), to share the costs and risks associated with the development of an innovation and ultimately make it easier to gain a competitive advantage (Dyer and Singh, 1998). Cooperation can also represent a barrier to entry and make it difficult to imitate innovation. A competitor may have difficulties to reproduce the network of inter-organizational relationships designed to innovate (Borgatti and Foster, 2003).

However, despite the issues related to cooperation for services innovation development, research in innovation management focus more on technological innovation networks (Ethiraj et al, 2005; Gilsing and Nooteboom, 2006) and have little interest in constellations of actors for innovation in services. This research therefore attempts to fill this gap especially by studying the link between the characteristics of inter-organizational network and the type of innovation developed. Our research question is: Does the implementation of services innovations require certain types of networks? For this purpose, we chose to study the innovations implemented in two French ski areas: *Paradiski* and *Portes du Soleil*. The mountain tourism industry is particularly relevant to our research question because it has undergone many changes over the last fifteen years, which led ski resorts to innovate and collaborate with multiple partners.

The article is divided into three parts. The first one presents a review of the literature on innovation forms in services. A summary of the main characteristics of the inter-organizational relationships is also performed and used to introduce our analysis framework. The second part explains the importance of studying winter sports tourism as well as the methodology used. Finally, the characteristics of innovation networks are presented and discussed.

1. Inter-organizational network as a vector for innovation in services industries

After presenting the specificities of innovation in services, we propose to characterize the inter-organizational networks with four dimensions: the nature of the relationship, the control mode, the architecture and the geographical scope.

1.1. Characteristics and types of service innovations

One difficulty in identifying innovation in services comes from his character sometimes less tangible than in industry, including the presence of many incremental or architectural innovations (De Vries, 2006). Social or managerial innovations (Hamel, 2006) are not always visible outside the organization. To improve the identification of innovations in services, literature has produced many classifications. Most of them rely on a single dimension:

- The element affected by the innovation (product, process, or organization; Belleflamme et al, 1986 ; Hamdouch et Samuelides, 2001 ; Damanpour et al., 2009 ; Favre-Bonté et al, 2009). Garcia et Calantone (2002) call this dimension the « *new what* ».
- The innovativeness (Garcia et Calantone, 2002 ; Birkinshaw et al., 2008 ; Favre-Bonté et al, 2009): measure of the degree of « newness » of an innovation (highly innovative, low innovative ; new to the world, new to the adopting unit, new to the industry,) which can be combined with its risk level.
- The way innovation is produced (with or without customer participation; Sundbo and Gallouj, 1998).

In winter sports tourism services, it is often difficult to identify the resorts that are the source of innovations because there is no intellectual property right and many firms tend to claim the origin of new concepts or services. It is thus often difficult to assess the actual degree of novelty of an innovation. Therefore, in this research, we focus on the element affected by innovation, that is to say the " new what ". We make this choice because this dimension seems more objective. By focusing on the element affected by innovation, we have chosen to use the model of service delivery system (Langeard et al., 1981). Unlike the blueprint approach (Bitner, Ostrom, Morgan, 2008), which includes the time and the various operations, this model focuses on the role of the client and its interaction with the service company. In

addition, it allows us to go beyond the usual product / process distinction used in the industry, as it separates process elements that are visible by clients and those which are not (Favre-Bonté et al, 2009). This model includes three main components. (1) Back-office (i.e internal organization, or backstage) includes all traditional functions of a company that are invisible to the customer (marketing services, human resources, purchasing...) and their operations (working methods, equipment, information systems...). (2) The front office consists of all the elements that are visible by clients and that make the service more tangible. We can find (2.1) the staff (employees with whom clients are in touch), (2.2) the physical evidence (equipment used by the staff or customers in service delivery, such as machines, robots, furniture, signage, and more generally the premises on which the service is delivered), and (2.3) the customer itself, who is more or less involved in service production (he can define the problem and/or be engaged in operational tasks) and can interact with other clients. (3) Finally, the system delivers an output: the service itself offered to the customer.

In this research, we focus on the main element concerned by innovation. We are aware that the deployment of an innovation can affect different parts of the service, more or less simultaneously, with cascading effects identified in the literature (Damanpour and Evan, 1984; Barras, 1990; Fritsch and Meschede, 2001). However we only retain in our classification the component which is the most important part of the innovation or the one that was the source of the innovation process (the component that the firm wanted to improve).

1.2. Heterogeneity of inter-organisational network forms

Inter-organizational networks represent a way for firms to achieve economies of scale (Powell, 1987) and access to new resources and skills (Stieglitz and Heine, 2007). Inter-organizational networks are here understood as a set of at least three organizations linked by exchange relations in the long term and by the sense of belonging to a collective entity (Grandori and Soda, 1995). There are multiple forms of inter-organizational networks that can be characterized through four dimensions: the nature of the relationship between the members (1), the mode of regulation (2) the architecture (3) and the geographical scope (4).

1. **Relationship between partners** can take many forms (Inkpen and Tsang, 2005):

- The horizontal type: Members build relationships with competitors to share the same resources.
- The vertical type: The aim is to achieve a transfer of additional resources, between client and supplier.

- The "cross-industry" relation (Heitz, 2000) is established between potentially complementary organizations that are not competitors, or connected by customer-supplier relationships. This type of network is willing to share skills or promote a single resource (eg, the network between the leader of the smart card, Gemplus, banks and mobile operators).

These three "pure" forms of inter-organizational networks can be combined to create new forms (Gomes-Casseres, 2003). For example, networks in travel services bring together airlines (horizontal relations) as well as tour operators, car rental agencies, hotel chains (vertical relations), even banking and financial institutions (transversal relations) to provide customers with a "global" offer.

The type of relationship appears as a central dimension in innovation management research conducted in industry (Gemünden Ritter and Heydebreck 1996; Nietoa and Santamariab, 2007). Gemünden et al. (1996) study the link between the type of relationship (partners, competitors, suppliers, laboratories...) and the type of innovation developed. For process innovations, they show the importance of integrating all partners, particularly those connected by customer / supplier relationships. In contrast, product innovations specifically require the intervention of technical partners. However, the results of this research, conducted in the industrial sector, may not be transferable to services where the technical dimension is not always central.

2- Regulation mode refers to the coordination mechanisms implemented.

Economic regulation includes formal mechanisms such as contracts, procedures and specifications. These formal, explicit and written mechanisms come in many forms such as standard operating procedures, technical reports, cost accounting systems, budget & planning, contracts and confidentiality agreements (Das and Teng, 1998; Gulati, 1998). Contracts can play a key role in inter-organizational relationships when it comes to sharing specific assets. In contrast, sociological regulation is based on adjustment mechanisms, trust and clan logic. Regulatory mechanisms are then rather implicit and verbal and include the establishment of joint teams, seminars, meetings, personnel transfer and mechanisms for shared decision-making (Grandori and Soda, 1995). These informal methods have advantages such as lower transaction costs, increased strategic flexibility and reduced risk of conflict (Nooteboom, Berger and Noorderhaven, 1997).

Formal mechanisms are often considered problematic for the deployment of certain type of innovations, like exploratory innovations (Nooteboom, 2004). Indeed, an exploratory

innovation is inherently uncertain and it is difficult to write contract on an output which is not known. In the context of service innovation, we may wonder if the control mode is always the same or if it depends on the type of innovation, as it is the case in the industry.

3. An inter-organizational network can also be characterized by its structure or **architecture** (Assens, 2003). Two types of networks exist, according to the degree of power sharing:

- Star networks: these architectures are very centralized; all sources of information are centralized by a company, often a large one. There is a formal organization (called focal firm, hub firm, strategic agency or core) who regulates transactions within the structure (Miles and Snow, 1986; Jarillo, 1993; Lorenzoni and Baden-Fuller, 1995; Dhanaraj and Parkhe, 2006). This hub firm has three functions: 1) the design of the value chain, choosing the members of the network and setting the strategic direction; 2) the coordination of the value chain, optimizing operational links between members of the network, limiting administrative costs inherent in the hierarchy, maintaining coordination modes by the market, and 3) control of the value chain, deterring opportunistic behavior that could disrupt network efficiency.
- The community-based networks (Assens, 2003) where the architecture is more distributed. In these networks, power is decentralized and more or less shared.

In the industrial sector, the presence of a hub firm seems essential (Dhanaraj and Parkhe, 2006). It helps to orient and make strategic choices. In the absence of authority and a central player, decision making is slower and it is more difficult to define strategic choices, due to potential differences between partners. In service innovations, we may wonder whether, the presence of a hub firm is also essential to ensure the sustainability of the project, regardless of the type of innovation deployed.

4. Finally, the fourth dimension to describe a network is its **geographical scope**, that is to say the geographical proximity of partners. Network may be local, national or international. We retain this last feature because many research (Autant -Bernard, 2001; Fritsch and Lukas, 2001; Suire, 2004) emphasize the importance of the geographical proximity between members of a network for its proper functioning. Many works on the issue of territory in the formation and operation of networks exist in many industries (Bélis-Bergouignan 1997; Autant -Bernard, 2001; Dunning and Mucchielli, 2002 Fritsch and Lukas, 2001). They conclude that value creation increases when the network fits territorially. Proximity promotes flexibility, frequency of interaction between members and the genesis of confidence (Bernard

and Vicente, 2000). Some innovation projects require face-to-face relationships between partners, because knowledge is more easily transmitted in a small restricted region (Von Hippel, 1994). In addition, given the differences between countries in terms of culture, customs and laws, learning can be more difficult and delay the process of innovation. Other research, however, stipulate that the transfer of knowledge does not necessarily require geographical proximity (Feldman, 1994). Thus, with the development of information and communication technologies, international networks work alongside clusters or districts. In summary, our analysis framework offers to study the element concerned by innovation (the “new what”) and the characteristics of the networks developed to achieve this innovation (see Table 1 below). We want to identify if the implementation of certain types of innovation (new offers, front office or back office innovations) requires the creation of inter-organizational networks with specific characteristics.

Table 1: Analysis framework of the link between networks characteristics and innovations types

		Networks characteristics			
		Relation type (horizontal / vertical / inter-industry)	Regulation mode (economic / sociological)	Architecture (Centralized / decentralized)	Geographical scope (local / national / international)
New what	New offer				
	Front office innovation				
	Back office innovation				

2. The study of innovation networks implemented by two winter sport resorts

After presenting the reasons that led us to retain the winter sports tourism sector in this study and the specificities of this service activity, we will present our methodology for collecting and processing data.

2.1. The choice of the winter sports tourism activity

Services are very heterogeneous and parallel study of several sectors does not make meaningful comparisons (Djellal and Gallouj, 2008). Thus, we have chosen to focus our study

on a single service activity, tourism, which, apart from its economic weight¹, seems to be a fertile ground for the analysis of innovation networks (Tremblay, 1998).

The mountain touristic trip is heterogeneous by nature and involves in its production–distribution process the coordination of numerous people (Scaraffiotti, 1997; Caccomo et Salonandrasana, 2006). A winter sports resort is in fact a complex and original system bringing together private (ski-lift operators, accommodation providers, transport, ski rental shops...) and public partners (Gerbaux and George-Marcelpoil, 2004), who own complementary resources and competences (Svensson et al, 2005). Promoting a destination also depends largely on the ability to integrate a fragmented supply in a single coherent product (Pavlovich, 2003 Saxena, 2005; Gibson, Lynch and Morrison 2005, Scott et al, 2008). The nature of the tourism product therefore affirms the central role of coordinating activities (Lynch and Morrison, 2007). This intrinsic characteristic of the tourism product is now reinforced by the need to innovate in response to increased competition, which leads to more coordination between organizations. Ski resorts have to offer new sports practices² (snowpark creation, diversification outside ski activities: snowshoeing, ice diving ...), more comfort (improved quality lifts and accommodation) and animation (discovery of local heritage, cultural activities, events ...). Those innovations, today essential, were also enhanced by a vast movement of concentration and the arrival in the resort of new profiles of actors (non-family, larger sizes businesses). Finally, technological improvements, among them the Internet, have also contributed to the development of innovations in the tourism sector. The internet has changed the nature of relationship between organizations and the distribution of power between clients and suppliers (Favre -Bonté and Tran, 2012). For example, if the Internet allowed many ski resorts to sell their packages directly online, the web has also led to greater transparency and increased the rivalry between the ski resorts.

However, despite the challenge and the reality of innovations in winter sports resorts, service innovation researchers (Gallouj and Weinstein, 1997; Djellal and Gallouj, 2005) or innovation networks researchers (Ethiraj et al, 2005; Gilsing and Nootboom, 2006) are still uninterested in innovation networks in this sector (Hjalager, 2010).

¹ In France, the total turnover of the winter sports economy (including ski lessons, shopping, accommodation, restaurants and ski lifts) is estimated at 6 billion euros, divided up to 5 billion euros for French clients and 1 billion euros for foreign clients. This represents 6% of revenue in the tourism sector (Rolland, 2006). The activity generates 130,000 direct jobs, including more than 18,000 ski areas. With 8000 km of slopes and 4000 ski lifts, France has the largest ski area in the world (Atout France, 2010).

² Today, one third of the tourists who stay in a winter sports resort do not ski.

2.2. Data collection and analysis

As the aim is to explore the potential link between the networks characteristics and the purpose of innovations, we opted for a qualitative study based on the analysis of 12 innovation networks. A multi-cases study can handle a limited number of cases, but has the advantage of breaking down each of the networks and provide a detailed analysis. This method also provides a detailed description of the events along with a systematic analysis of the relationships between partners.

Multi-cases studies involve the establishment of a theoretical sample with common characteristics: networks are composed of at least three independent organizations (public or private ones) and innovations concerned the ski area. Seven cases are localized on the *Portes du Soleil* ski area and the other five are localized in the *Paradiski* ski area. These two areas have in common to be located in the northern French Alps and predominantly have a European clientele. If the sample must be homogeneous, it must also have some variety to better understand the impact of network characteristics on the innovations implemented. Those ski areas have different modes of governance (one is centralized around a mid-sized company, *Compagnie des Alpes*, the other is more collegial and associative), are located in two separate territories (one is Franco-Swiss, the other 100% French) and does not have the same number of ski resorts. We have taken care to select networks of different sizes and age, and which involve different ski resorts (see Table 2).

The initial data collection aimed to identify what were the innovation networks developed in these two ski areas. To reduce the analysis complexity, we focused primarily on innovation networks developed around sporting or leisure activities in connection with the ski areas. We do not, for example, studied the innovations developed by hotels or residences. In a second step, we focused on the innovations that have been driven by an inter-organizational network. Among these, we quickly identified key players who can be assimilated to the hub firms in several innovation projects. We identified the tourist office of *Avoriaz* (major international ski resort connected to the *Portes du Soleil* area), the Association of the *Portes du Soleil* and the tourist office of *Les Arcs* (ski resort attached to the large international ski area, *Paradiski*) as potential hub organizations.

Table 2: Innovation networks characteristics

Innovations*	Ski area	New what		Year of implemen tation**	Nb of different type of actor ***	Nb of ski resorts involved
Aquariaz	<i>Les Portes du Soleil</i>	Ski areas Innovations	New offer	2012	3	1
Stash			Font office Innovation	2008	3	1
You can ski			New offer	2009	6	12
Multipass			New offer	2009	8	12
Training Kit for TO			Font office Innovation	2008	3	1
Cabaret Week			New offer	2005	3	1
Distribution system of ski pass earnings			Back office Innovation	2009	2	12
Rock the pistes			New offer	2010	9	12
Mountain Pod			New offer	2010	3	3
Vanoise Express			<i>Paradiski</i>	Font office Innovation	2003	3
Nirvanalps	Back office Innovation	2010		5	3	
Premium Offer	New offer	2013		7	3	

* : In order to facilitate understanding, we have given the innovation name to the innovation network
** : commercial launch
*** : main types of actors involved (not all individual organizations of the network as they can be too numerous)

To ensure data triangulation, we used three different data sources: interviews, direct observation and secondary data. Ten semi-structured interviews, lasting an average of 3 hours, were conducted during the years 2011 and 2012 with key network actors (pivots and actors behind innovation), heads of Tourist Office, ski areas or ski lifts. We also interviewed actors who have helped us to understand the territory, while facilitating access to key people (*Savoie Mont Blanc Tourism* Director, Member of the Executive Committee of SMB destination, or the Tourism Plan coordinator of the *Savoie* Travel Agency). These interviews helped us to realize networks mappings. These mappings represent, for each innovation project, the relationships between members (an example is given in Appendix 1). They facilitate the identification of roles, resources and expertise provided by each partner. They also facilitate the interpretation and the restitution of data. Direct observation was made by positioning us as customers of these ski areas and using innovative services studied. This passive observation was not only intended to test these innovations but also to capture the feelings of customers, who are full members of the service process. In addition, external secondary data (websites, press clippings ...) allowed us to have a better understanding of innovations implemented.

Finally, to analyze data, we used the analytical framework developed at the end of the theoretical part (Table 1). We will now characterize the observed networks and classify the identified innovations.

3. Networks analysis in terms of innovation type: results and discussion

We present the main characteristics of the 12 networks used to develop new offers, front office or back office innovations. Then, we discuss the results.

3.1. Characteristics of networks by innovation type

The twelve innovations brought by networks that were identified in the two ski areas are presented in Table 3. In terms of types of innovation, this table shows that new offers are the most numerous (7 of 12), far ahead of front office innovation (3 innovations only) and back office innovations (2 innovations). This is not surprising because the competition between ski resorts is now particularly harsh. Therefore, a ski resort has to multiply visible innovations, to retain increasingly demanding and eager for novelty customers and to attract new customers not necessarily in search of athletic performance but eager to increase experience within a territory (Clydesdale, 2007).

Table 3: The 12 innovations networks studied

Innovation type	Innovation studied	Innovation Description	Networks characteristics			
			Relation type (horizontal / vertical / inter-industry)	Regulation mode (economic / sociological)	Architecture (Centralized / decentralized)	Geographical scope (local / national / international)
New offer	Aquariaz	Tropical aquatic centre aimed primarily at skiers wishing to complete their ski days by relaxing in the water, especially at the beginning and end of season	Inter-industry	Economic	Centralized Hub Firm : Pierre & Vacances	International
	Mountain Pod	Audio guide for skier. The skier can download from the Internet, via a MP3 player or smartphone, audio sequences that allow better exploring the landscape through terminals located in different places of the ski area.	Vertical (Tourist Office, computer company, ski lift)	Economic	Centralized Hub Firm : Les Arcs Tourist Office	National
	You Can Ski	Attract beginners through an all-inclusive ski package (ski pas, ski lessons and ski rental). Provide to these skiers a welcome booklet and isolated and protected slopes, localized within a walking distance.	Inter-industry horizontal	Sociological with local people (Economic with Tour Operators)	Centralized Portes du Soleil Association	National
	Multipass	Allow the summer customer, for € 1 per day, to enjoy unlimited access to a large number of infrastructure (sporting and cultural) of all resorts localized in the Portes du Soleil	Inter-industry horizontal	Sociological	Centralized : PS Association	Local ³
	Rock the Pistes	Over five days, five concerts are held on the slopes in five stations of the ski area.	Inter-industry horizontal Vertical	Economic with far members ;	Centralized PS Association	National

³ In the Multipass and Rock the Pistes cases, we considered that members were local and national even if the Portes du Soleil area is by definition international (it is localized half on France, half on Switzerland). It is the geographical proximity which prevails.

				Sociological with local members		
	Cabaret week	Event designed for Russian customers. During a week, all the restaurants of Avoriaz are changing every night cabaret to provide 40 "dinner show" for tourists, with no extra meals or entrance fees.	Vertical	Sociological	Centralized Avoriaz Tourist office	International
	Paradiski Premium offer	Give a set of "special" services reserved for high-end customers.	Inter-industry: (Pierre & Vacances, Club Med) horizontal (La Plagne)	Economic	Centralized les Arcs Ski lifts	International
Front Office Innovation	Stash	Create a space in the heart of the forest to offer skiers and snowboarders a mixed slip between freeride and freestyle, while delivering messages about environmental protection	Inter-industry	Economic	Centralized Burton	International
	Training kits for TO	Intense and original training for sales managers and employees of key tour operators.	Vertical	Sociological	Centralized Avoriaz Tourist Office	International
	Vanoise Express	The biggest cable car in the world connecting two valleys (and not through the peaks), technical feat that allowed the realization of the Paradiski area.	Vertical (Pomagalski) Horizontal (ski lift C° of Les Arcs and La Plagne); Les Arcs and la Plagne T. O. ; Municipalities	Economic	Centralized SELALP (Cie des Alpes subsidiary)	National
Back Office Innovation	Nirvanalps	CRM web portal to reference all beds belonging to private owners.	Inter-industry	Economic Sociological with private owners	Centralized Les Arcs Tourist Office	Local
	Distribution system of ski pass earnings	System implemented to allocate revenues issued from the sale of ski passes, based on miles traveled by skiers on each resort.	Horizontal Interindustry	Economic	Centralized Portes du Soleil Association	Local

Table 4 is designed to summarize data used to draw conclusions regarding the relationship between the characteristics of innovation networks and the innovation type.

Table 4: Networks characteristics and innovation type

	New offer	Front office innovation	Back office innovation	Total
Relationships :				
• Horizontal	4	1	1	6
• Vertical	3	2	0	5
• Inter-industry	5	1	2	8
Regulation :				
• Economic	5	2	2	9
• Sociological	4	1	1	6
Architecture :				
• Centralised	7	3	2	12
• Decentralised	0	0	0	0
Geographical Scope :				
• Local	1	0	2	3
• National	3	1	0	4
• International	3	2	0	5
Total	7	3	2	12

New offer

For the majority of innovations that focus on new offers, we observe that networks have a centralized architecture (with the existence of a pivot). They gather few competitors (to benefit from scale effects generated by alliances), but more and more partners who can provide additional resources (customers, suppliers or companies from other industries). Regulation is of an economic nature since it involves actors outside the station, otherwise it is sociological. However, the sociological mode can bring about malfunctions. Thus, as stated by one interviewed actor *"it is sometimes hard to know exactly who should do what and how. It would be more effective and would be better for our brand if we wrote more elaborate procedures"*. Finally, the networks have a geographic scope increasingly wide (national or international), as partners from other industries are rarely located within the resort.

Front office innovations

Regarding innovations that are intended for improving the front office, vertical relationship is often preferred. Those networks have a pivot which is (two out of three times) located in the

resort. We found mainly economic regulation as members are supervised by strict safety standards (when transporting skiers) or specifications for the preservation of their brand (company internationally renowned as Burton). As these suppliers, distributors or providers of complementary resources are not located in the ski resort, network coverage is national or international.

Back office innovations

Inter-organizational networks supporting back office innovations seem gather inter-industry members but rather localized within the resort. If the Tourist Office is often the pivot, geographical proximity of members introduced a sociological regulation mode, although it is not always a priority.

3.2. Discussion: types of innovations introduced by the deployment of certain types of networks

Different types of networks emerged according to the type of innovation, on three of the four dimensions (nature of relationships, geographical scope and regulation mode). Regarding the **nature of the relationships**, it first appears that front office innovation networks are more vertical because they aim at making more tangible the service qualities (improving physical evidence) or at better convincing customers (via the action of staff, here tour operators agents). They involve upstream members (a supplier who brings technology) and / or downstream members (a distributor with whom the firm will build co-innovation). However, for the other types of innovation (new offers or back office innovations), networks are mostly cross industrial. This is not surprising since, by definition, a holiday stay bring together different types of services (accommodation, restaurant, ski lift, equipment rental, tourist office...). However, outside those traditionally providers, it is clear that for differentiation purpose, ski resorts are now increasingly using actors that are not part of the mountain tourism industry (eg musical production companies, waterparks companies...). The new offers also require more horizontal coordination between resorts belonging to the same ski area. Those resorts must manage the cooperation / competition duality, also called cooptation (Brandenburger and Nalebuff, 1995). To create value and innovation, ski resorts can no longer act in isolation and must recognize their interdependence (Lado, Boyd and Hanlon 1997).

If the link between the nature of relationships and the type of innovation developed has already been identified in the industry (Gemünden et al, 1996), we noted specificities of

service innovations. Partners who are solicited by innovations are from a different type than in industry.

In studies on cooperation evolution, the selection process takes place mainly at the start of the cooperation process (Rueur, Zollo and Singh, 2002). Conversely, in the networks studied, the selection of members is done throughout the project, according to the new needs. During the selection phase, the main criteria are the resources and skills possessed by partners. This result refers to the resource-based view. It is a proactive approach where a company is aware of its lack of resources and skills to deploy innovations and decides to call partners. In our research, this approach is often initiated by a public actor: the tourist office. Besides this main criterion, the hub organization also chooses its partners according to their reputation and the extent of their own network. Proximity does not appear as an important selection criterion.

If to stand out from competitors, ski resorts expand their networks to members who are distant in terms of activities, this is also reflected in the **geographical scope** of the network. Mountains resorts used to have a very geographical operation and were sometimes treated as localized productive systems, very embedded in their territory. It appears that nowadays, members of an innovation networks are mostly located outside the resort, in France or abroad. Thus, although the proximity traditionally reduces coordination costs (Dyer and Singh, 1998) and facilitates informal exchange and knowledge transfer (Von Hippel, 1994; Bernard and Vincente, 2000), it seems that for innovations developed around ski areas, local partners are no more sufficient. Resorts must find creative partners who can provide resources and skills that cannot be found within the resort. Alliance with foreign partners is also a way to internationalize the resort and thus find growth overseas. One type of innovation is an exception to this rule: back office innovations that are supported by local networks. These back office innovations, not visible to the client (and therefore not necessarily differentiating for him when choosing his stay), are designed to integrate and facilitate coordination between stakeholders in the on-site touristic stay. It is quite logical that the need to improve back office systems relate mainly local organizations, which should be particularly efficient in terms of information systems.

Concerning **architecture**, the presence within networks of a hub firm prevails, regardless of the type of innovation. We here find similarities with the industrial sector (Dhanaraj and Parkhe, 2006). In the theory of transaction costs (Williamson, 1985), members of a network agreed to delegate some of their authority to a central actor, if the degree of uncertainty is high. In this uncertain environment, transaction cost theory shows the importance of having a

hierarchical network, with a pivot that dominates exchanges and coordinates members. In contrast, hierarchical forms lose their meaning when the level of uncertainty is low. In this research, the systematic presence of a pivot is partly because the ski areas studied are already centralized around at least one key organization (a ski lift company or an accommodation provider), but this is also due to the very recent questioning of mountain territories. Traditionally composed of heterogeneous actors enjoying a growing market, actors have tended to operate in isolation. Today, given the competitive intensity and winter sports market trends, the presence of a pivot seems necessary to drive the innovation dynamics and taking all stakeholders to more collaboration (Dhanaraj and Parkhe, 2006). This hub organization changes, depending on the nature of the innovation project. It can be an institution (an association like *The Portes du Soleil* or a Tourist Office) or a large company that owns most of the value chain activities or a key element of the latter (*Compagnie des Alpes, Pierre & Vacances*). Despite the presence of some large companies, they are often local organizations or public operators who are the driving stakeholder in tourism innovations (Hjakager, 2010). However, we have not observed SME who drive networks. This can be explained by the fact that they are often in a situation of high dependence. Indeed, it is difficult for this kind of firm (1) to control their environment by making acquisitions (due to lack of resources and expertise) and (2) to create a more favourable environment through political activities such as lobbying (Pfeffer and Salancik, 1978).

Finally, concerning the **regulation mode**, it appears that the economic mode is more favored over the sociological mode that requires the establishment of trust between members (Assens, 2003). Sociological mode is only preserved to coordinate well-known local actors. Casanueva and Galan Gonzalez (2004) have already shown, in the shoe industry, that the firms of a network exchange tacit information only with those firms with which they maintain stronger social and business links. However the use of economic regulation reflects a change in the mode of operation of ski resorts. Originally, ski resorts were rather characterized by informal networks based on geographical and cultural proximities of members. These networks could be assimilated to clans (Ouchi, 1990). However, with the retirement of the first generation of business owners, the arrival of foreign companies based more on economic and financial considerations who take control of ski lifts or accommodation (Cattelin and Thevenard-Puthod, 2006), the increasing competition and the imperative to innovate, the control mode changes to the economic mode. This choice is also supported by the fact that networks are composed of members geographically distant and selected according to complementary resources and skills criteria. RBV can also be used to explain this evolution as the

sustainability of a ski resort depends on its ability to acquire and maintain the necessary resources. Moreover, one can also think that the difficulty for a winter sports resort to protect its innovations reinforces rational and economic relations between members of an innovation network. Back office innovations seem to escape this rule since they obviously tend to favour the sociological mode, for the reasons mentioned above (coordinating only local actors). This difference of regulation mode according to the type of innovation has been revealed in the industry. But unlike the work of Nooteboom (2004), which focused on the relationship between the degree of innovation and the preferred mode of regulation in the industry, our results highlight a possible link between the element that carries the innovation and the control mode used.

Table 5 summarizes those results and therefore characterizes the networks formed by the winter sports resorts according to the type of innovation developed.

Table 5: Networks characteristics according to the nature of innovations

		Networks characteristics			
		Relation type (horizontal / vertical / inter- industry)	Regulation mode (economic / sociological)	Architecture (Centralized / decentralized)	Geographical scope (local / national / international)
Type of innovations <i>New what</i>	New offers	Inters-industry and horizontal	Sociological with local members Economic with other members	Centralized	National or international
	Front Office Innovations	Vertical	Economic	Centralized	National or international
	Back office Innovations	Inter-industry	Priority to sociological	Centralized	Local

CONCLUSION

The study of 12 innovations implemented within two ski areas highlights a link between the type of innovation deployed and the type of network formed. It seems that new offers, front office or back office innovations network differ in terms of partners involved (competitors, suppliers, distributors, actors outside the industry), regulation mode (economic or

sociological) and geographical scope (local, national or international). However, it seems that there is always a central player in charge of orchestrating the exchanges between partners, regardless of the type of innovation. It is also clear that cooperation only underpinned by tacit or informal modes of exchange (Gulati, 1998) is less observed. Indeed, in touristic innovations networks, conflicts of interest or power games between actors are almost inevitable (Miles and Snow, 1986). Thus the presence of a hub firm or pivot is important to manage disagreements and differences, and facilitate the development of innovative projects. This pivotal role is often provided by a public organization (tourist or local institution), with some local legitimacy (Kumar and Das, 2007). Winter sports resorts who want to innovate must be aware of the important role of this central actor that drives the innovation dynamics, selects the members able to contribute to effective innovation implementation and coordinate their actions.

At the managerial level, considering the four dimensions when building an innovation network is a significant contribution, as these dimensions appear to be different depending on the type of innovation. Ski resorts who want to innovate must also be open to external partners (companies which are not belonging to the tourism industry and / or are not geographically localized in the resort). The openness of the network to "original" partners facilitates the design and implementation of more radical innovations.

However, beyond the traditional limitations due to the use of a qualitative methodology, a limit related to our questioning appears. Thus, if this contribution addresses the link between innovation type and characteristics of inter-organizational network, it does not address the possible reciprocal link. In some situations, it may be possible that networks determine the innovations implemented. Future research should therefore consider this "reciprocity" and look deeper into the relationship between inter-organizational network and innovation as well as the direction of this relationship. It would also be interesting to expand the research field to other mountain areas in order to face, via the multiplication of the number of cases studied, other innovations which can be deployed in other types of networks. Network structures identified in this paper could also be validated on a larger sample size.

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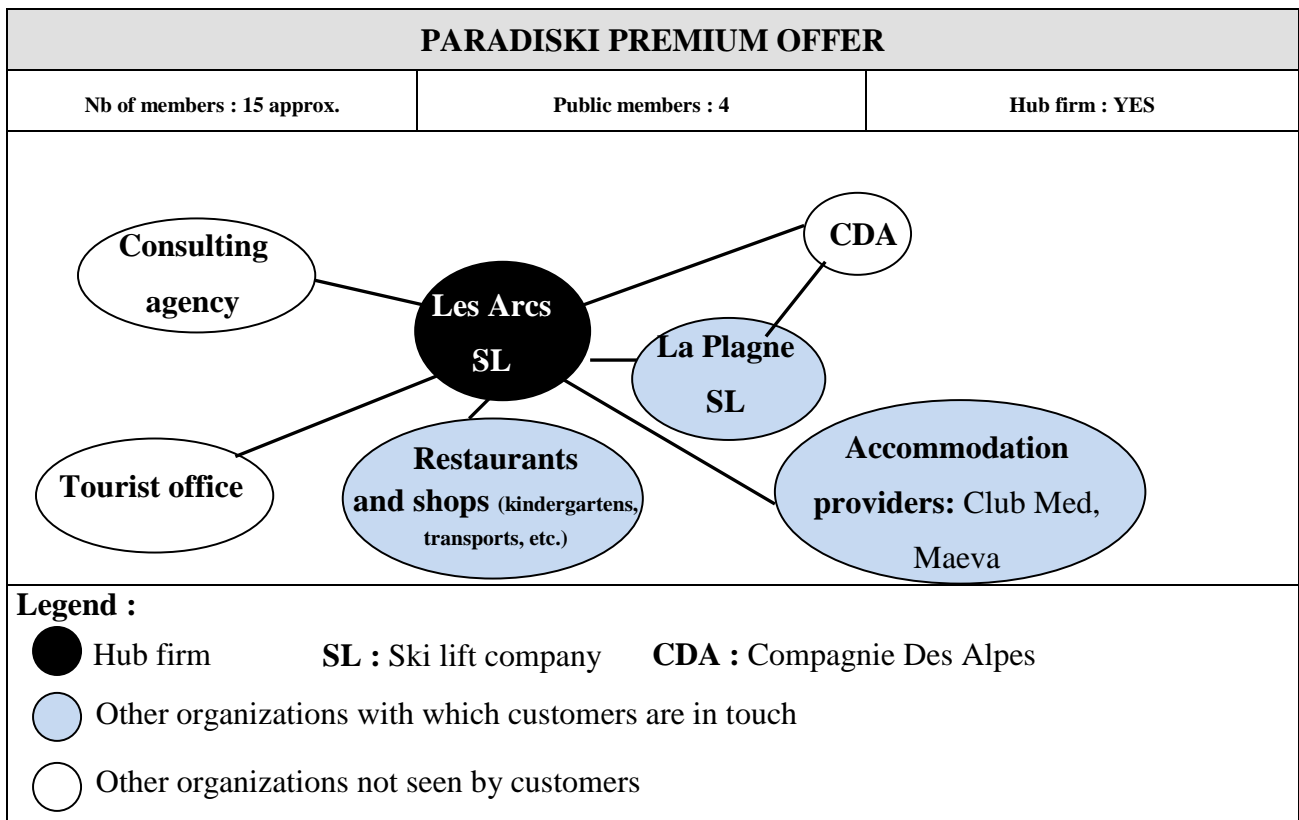
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Appendix

Example of mapping done for Paradiski Premium offer⁴

This visual approach quickly highlights the network structure and the nature of existing links between each partner. It facilitates the identification of the structural characteristics of the network (nature of the relationship, architecture) and the roles of different partners. The intention is to facilitate the interpretation and restitution of results.



⁴ In order not to overload the paper, we have not inserted all network mappings. Naturally, the authors could provide the other mappings upon request.