

**Linking Customers through Linking Firms:
how CRM Alliance Networks Affect Effectiveness in Managing Customer Relationships**

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*To my wife Raffaella,
The beautiful light
Guiding my research*

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ABSTRACT

In this study I investigate how the success of a CRM program, i.e. the effectiveness of a CRM program in affecting the customer base loyal behavior, is affected by the existing co-marketing alliances that the firm develops on the program.

More specifically, I propose a theoretical framework that models the impact on the CRM effectiveness exerted by two main features of the alliance network: the embeddedness of the firm in the network, which I investigate under its structural and relational dimensions, and the marketing complementarities existing between the firm and its network partners.

First, I argue that the configuration of the structure of relationships between the firm and its partners – the structural embeddedness – affects the firm's effectiveness in CRM, through a volume effect given by the firm's centrality in the network, and through a social control mechanism given by the cohesion of the firm network. At this level, I contend the competing argument of structural holes, which is instead based on an exclusivity effect, given by the absence of cohesion in the firm's network. Second, I argue that the overall configuration of dyadic relationships between the firm and its partners – the relational embeddedness – affects its effectiveness in CRM, through a non-binding effect given by the weakness of the collaborative relationship. At this level, I contend the competing argument of strong ties, which is instead based on a resource-sharing effect, given by the trust and commitment existing in strong collaborative relationships. Third, I argue that the fit with the characteristics of the partners' customer base and products/services offered to the customer base – the marketing complementarity – affects the firm's effectiveness in CRM, through an externality effect given by the extra-benefits transferred to the customer through the joint CRM effort. Fourth, I argue that the network structure effect on CRM success is greater when relational embeddedness and marketing complementarity increase, because both affect the quality/quantity of resources flowing through the structure.

I test the framework through a cross-sectional research design based on survey data, which has been collected from the population of the scheduled passenger air traffic industry worldwide, and integrated through a further analysis of secondary data in order to map the overall web of alliances. I control for cultural effects across different geographic regions and for size effects. I exclude from the empirical model the volume effects associated to the centrality variable because of collinearity with the size control term.

I collect 22 completed survey whose analysis allows a first albeit partial statistical validation of the proposed theoretical model.

On the basis of these data, I find that social control in the firm's network of alliances, weak ties with partners, and marketing complementarity at the level of customers and products/services positively affect the firm's effectiveness in managing its customer relationships. I do not find interaction effects between the structure and the complementarity neither between the tie-weakness and the complementarity.

Such results suggest that networks of co-marketing alliances on CRM affect the firm's effectiveness in managing customers through independently-acting mechanism. The network structure acts at a higher-order level, by setting the rules of economic behavior according to social norms facilitating cooperation and customer-based resources access. The relational features operate at a local level: weak relationships let partners enjoying the benefits of customer resources sharing without binding their behavior to that of the partner. The marketing complementarity finally increases the firm's ability to deliver value to the shared customer base, therefore further enhancing its effectiveness in managing customer relationships.

Overall, such results provide a first partial support for a network view of marketing outcomes, and contribute to embeddedness theory of economic behavior by extending it to CRM outcomes and by further specifying how different embeddedness dimensions operate in the research setting of CRM alliances. Moreover, such study contribute to previous researches on complementarity in marketing alliances, by deepening the understanding of how complementarity works in affecting the firm's ability to manage customer relationships.

Limitations and future research directions are discussed in the final part of the study.

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Chapter 1 Introduction

1. Research Question

How firms can increase effectiveness in managing relationships with their customers?

In last two decades marketing research and practice have been deeply influenced by relationship marketing scholars, who claimed that marketing should focus toward managing relationships with customers, instead of managing spot transactions (e.g. Dwyer et al., 1987).

A wide array of studies, focusing on various relational constructs, provided contributions to the argument that long-standing customer relationships are a source of competitive advantage (e.g. Morgan and Hunt, 1994). At the same time, evidence shows that customer relationships lifetime is positively related to performance: according to Reichheld and colleagues, a 5% reduction in customer's defection rate can increase the net present value of profits from 25% to 85%, according to industry-specific characteristics (Reichheld and Sasser, 1990; Reichheld and Teal, 1996).

These studies bred a shift in firm's orientation toward customers, leading to the implementation of a relationship marketing approach through managerial tools, such as Customer Relationship Management – in short CRM – programs¹ or loyalty programs². The

¹ As Wilson and colleagues pointed out (Wilson et al., 2002), Customer Relationship Management has been considered by some authors as a synonym of relationship marketing (e.g. Hobby, 1999) and by others as the use of information technology tools to implement relationship marketing strategies (e.g. Ryals and Payne, 2001). Here I follow the first approach, considering CRM as a *Relationship Marketing in action*, in line with the view that the key component of CRM refers to the underlying customer strategy and the related relationship marketing approach to the customer base, more than to technology related issues (Day, 2003; Rigby et. al, 2002).

Therefore, according to Day, I define CRM as a cross-functional process for achieving (1) a continuing dialogue with customers, (2) across all their contact and access points, with (3) personalized treatment of the most valuable customers, (4) to increase customer retention and the effectiveness of marketing initiatives (Day, 2000b, p.4). Following this approach, CRM programs can be considered as structured organizational activities oriented toward developing CRM processes.

management of customer relationships has become the *new mantra* of marketing: an increasing number of firms is investing huge amounts of resources for implementing relationship marketing, engendering a market for products or services related to managing customers which is growing from \$34 bn. in 1999 to \$135bn. in 2004 (Reinartz and Kumar, 2002; Rigby et al., 2002; Winer, 2001).

However, the diffusion of such practices has resulted in most cases in discouraging outcomes: looking at a wide variety of industries, there are only few firms that obtain superior performance by maintaining close relationships with their customers (Day, 2003). More often, firms fail in enhancing relationships with customers (Sharp and Sharp, 1997), even damaging long-standing relationships (Rigby et al., 2002).

Therefore, the issue of how firms can increase their effectiveness in managing customer relationships is receiving a growing attention in marketing research. This trend is also confirmed by the Research Priorities issued by the Marketing Science Institute, which has elevated customer management topics to the top priorities for the 2002-2004 period.

Recently marketing scholars have addressed this issue by highlighting the strategic content of customer management skills: customer relationships are a source of competitive advantage precisely because they are difficult to be developed and managed effectively (Day, 2000a). They have pointed on what processes, values and norms inside the organization facilitate the acquisition of customer-related capabilities (Day, 2000b; 2003), providing insights for identifying appropriate tools of customer-knowledge management (Reinartz and Kumar, 2003).

Surprisingly, little effort has been made instead to identify sources outside the organization that may influence firm's effectiveness in managing customers.

However, there is evidence that an increasing number of firms rely on external sources such as CRM alliances³ to improve their ability to deal with customers. This evidence is

² Also if some studies have questioned the relationship marketing orientation of such practices, most researchers agree in considering loyalty programs as examples of relationship marketing in action or as CRM tactics (Dowling, 2002; Gilbert, 1996; Gronroos, 1996; Palmer, 1994; Peterson, 1995; Winer, 2001). Accordingly, they can be defined as "*mechanisms for identifying and rewarding loyal customers*" (Rayer, 1996, p.8).

³ In this dissertation, I refer to CRM alliances as to contract-based inter-firm relationships developed to collaborate in managing loyal customers. They typically involve collaboration about (1) advertising activities, (2) promotional activities and (3) reward schemes directed toward loyal customers, with the purpose of enhancing their loyal behavior.

compelling in loyalty management practices: according to KPMG, in retailing industries 67% of frequent buyer programs has moved from a pure scheme, involving only one firm and its customers, to increasingly complex coalition schemes, where firms coordinate their activities both in attracting and in rewarding loyal customers (KPMG, 2000). A similar pattern is noticeable also in travel industries (Gudmundsson et al., 2002), where co-marketing alliances focused on frequent travelers date more than a decade back (e.g. Toh et al., 1991).

Consider the following examples: Tesco's *Club Card* and Argos's *Premier Point* in grocery and miscellaneous retailing are loyalty schemes grouping partners from air transport, financial services, hotels, and utilities industries. Similarly, Starwood's *Preferred Guest* and Hilton's *HHonors* in hotels link firms belonging from air transport industry, car renting, and telecoms. Air France's *Fréquence Plus* and Alitalia's *Millemiglia* are networks involving firms from air transport along with car renting, financial services, hotels, travel agencies, retailing and telecoms industries. Vodafone's *VodafoneOne* and Telecom Italia Mobile's *Milleumatin* in telecoms also include firms from air transport, financial services, oil dealers, and retailing industries. Initially, many of these networks burned around one or more sponsor firms that activated a loyalty program and developed bi-lateral partnerships with a set of peripheral firms. Progressively, they tend to evolve into more complex web of partnerships, where sponsor firms become more and more inter-connected each other, and peripheral partners develop autonomous alliances with more than one sponsor firm. Air France and Alitalia both

CRM alliances can be considered as a form of co-marketing alliances, i.e. as "*contractual relationship undertaken by firms whose respective products are complements in the marketplace. They are intended to amplify and/or build user awareness of benefits derived from these complementarities*". Specifically, they are built in order to "*leverage firm's skills with the specialized resources of its partners to create a more potent force in the marketplace*" (Bucklin and Sengupta, 1993, p.32).

Given that they involve collaboration on advertising, they are a form of symbiotic marketing (Varadarajan and Rajratnam, 1986), i.e. alliances of "*resources or programs between two or more independent organization designed to increase the market potential of each*" (Adler, 1966, p.60). Moreover, by involving collaboration about sales promotions, they are a form of cooperative sales promotion, i.e. "*sales promotions characterized by the participation of and/or the pooling of promotional resources by two or more distinct entities designed to capitalize on joint opportunities for sales growth, profits, or realization of other objectives to the mutual benefit of the participants in the cooperative sales promotion program*" (Varadarajan, 1986, p.62). Specifically, according to Varadarajan's framework, they can be classified as inter-company multi-brands multiple product category sales promotions. Finally, by involving collaboration about reward schemes for loyal customers, they are an example of reward networks (O'Brien and Jones, 1995).

are connected to Hilton through partnerships on their respective loyalty programs. Hertz or Avis are partners both of Airfrance on the *Fréquence Plus* loyalty program and of Alitalia on *Millemiglia*.

While recognizing that the focus on the internal processes for managing customers may advance our understanding of how firms can increase effectiveness in CRM – since it points on the strategic relevance of organizational activities oriented to build customer loyalty – this study focuses instead on the inter-organizational environment of collaborative relationships where firms become embedded by establishing partnerships on their loyalty programs, namely the CRM alliance network⁴.

Specifically, I ask how partnering through CRM alliance networks affect firm's effectiveness in managing relationships with its customers. In order to answer this question, I investigate two distinct dimensions of the collaboration. First, I focus on the structural and relational characteristics of the firm's alliance network, which have been previously considered to affect firm's competitive and economic performance in the research stream of network embeddedness⁵ (e.g. Granovetter, 1985; 1992; Gulati, 1998; Rowley et al., 2000). Second, I point on the complementarity between a given firm and its network partners, which has been previously considered to affect the outcomes of collaborative relationships in strategic management studies on alliances (e.g. Dyer and Singh, 1998; Hamel, 1991; Harrigan, 1985; Harrison et al, 2001; Teece, 1987) as well as in marketing studies (e.g. Jap, 1999; Prince and Davis, 2002; Sarkar et al., 2001). Therefore, the research question I propose can be expressed more analytically as:

How do structural embeddedness, relational embeddedness and complementarity in a firm's CRM alliance network are related to its effectiveness in managing customer relationships?

⁴ I define a CRM alliance network as a set of CRM alliances and partnering firms that collaborate on processes oriented toward enhancing partners' effectiveness in managing relationships with their customers. Literature on loyalty management referred to this kind of networks as multiple participant programs (Sharp and Sharp, 1997), coalition or multi-retailer cards (Wright and Sparks, 1999), or rewards networks (O'Brien and Jones, 1995).

⁵ In this study, I will refer to embeddedness as a set of structural and relational properties of the network of relationships – namely the co-marketing alliances – that link a firm to other firms in the environment (see *infra*, §.2).

2. Motivations

While the issue of how partnering on CRM affect effectiveness in managing customer relationships has not been explicitly considered in literature before, several hints from previous studies suggest that this topic can be worth of further investigation.

First, previous research in the loyalty management research settings already noted that firms belonging to a CRM alliance network may increase their effectiveness in managing customers: namely, by joining different customer management skills and business expertise, partnering firms become able to design rewards schemes which fit a broader base of customer needs, increasing their ability to deliver value for customers and therefore their loyalty (O'Brien and Jones, 1995).

Moreover, since increases in effectiveness seem to be unequally distributed along the network (Sharp and Sharp, 1997), network membership by itself does not provide a satisfactory explanation to CRM effectiveness.

Instead, a relational perspective suggests that effectiveness in managing customers is related to the extent to which a firm is embedded in the network of relationships. For instance Blattberg and colleagues suggest that *"the most effective customer equity organizations will be those that can meet customer needs by bringing together coalitions of companies without ceding control of customer data and interactions...Extracting retention value from alliance networks will depend on occupying nodes where streams of customer information come together"* (Blattberg et al., 2001, pp.202-203).

However, the causal mechanism that links firm's effectiveness in managing customer relationships to the characteristics of its embeddedness in the structure of collaborative relationships still remains largely unexplored (Piercy and Cravens, 1994; Reingen, 1994)⁶. Specifically, marketing studies have not yet explained what is the rationale of the network for the single participant, i.e. how the outcomes at the firm level depend on being part of a network of inter-firm relationships.

⁶ According to Piercy and Cravens, *"The impact of the alliance strategy and the resulting network organizational forms with which it is associated is rapidly escalating, although surprisingly not widely recognized in the marketing literature, even though marketing relationships (as compared to R&D and manufacturing) account for a large proportion of inter-organizational collaborations"* (Piercy and Cravens, 1994, p.17).

This issue has been long debated instead both sociological and management studies, where competing arguments still exist about embeddedness consequences (Burt, 1992; Coleman, 1988; Granovetter, 1973; Krackhardt, 1992). While a common view of what structures of relationships are the most effective in shaping firm's performance has not been established yet, a wide evidence suggests that firms gain competitive advantages and enjoy superior performance from being embedded in networks of collaborative relationships, since these networks allow firms to share resources and competencies (e.g. McEvily and Zaheer, 1999; Powell et al., 1996).

Therefore, an extension of embeddedness theories to inter-firm marketing networks seems worth of attention in that it could add some important insights about how firms can share customer relationships and customer management skills in order to increase their effectiveness in managing customer relationships. Moreover, such approach may contribute to network theories on embeddedness by providing evidence about which argument better explains embeddedness consequences in marketing research settings.

Finally, a focus on complementarity is motivated by an attribute-based perspective, which stresses the role of the resource endowments and of the characteristics of actors collaborating through the alliance (e.g. Dyer and Singh, 1998; Harrigan, 1985; Jap, 1999, Sarkar et al., 2001). Previous research in marketing highlighted that complementarities between each partner's product and services affect the effectiveness of the marketing effort in advertising and sales promotion, since complementarity emphasizes how customers can gain value from the combination of each partner's products or services (e.g. Samu et al., 1999; Varadarajan, 1986; Varadarajan and Rajaratnam, 1986). These marketing tools are typically adopted in CRM programs with the purpose of enhancing relationships with the most valuable customers, and have been proved to be an antecedent of CRM tactics effectiveness (De Wulf and Odekerken-Schroder, 2003).

However, consequences of complementarities in CRM collaboration still need to be explored, in order to assess how complementarity in joint customer relationship efforts can impact on CRM outcomes such as customer loyalty. Moreover, complementarity has been previously investigated at a dyadic level, therefore leaving unanswered the question of how combining complementarity of different partners in a network allows a firm to deliver additional value to its customer.

In the following sections I present and discuss an integrative approach for investigating co-marketing alliances based on frequent buyer programs, which focuses on the effects both of a firm's embeddedness and of its complementarity with network partners on its effectiveness in managing customer relationships.

First, I review previous conceptualizations of CRM effectiveness and the existing literature on embeddedness theories and complementarity effects, summarizing the main results of current studies, and identifying some issues worth of further research.

Second, I propose a theoretical framework that adopts an integrated approach to embeddedness and complementarity for investigating customer relationship management effectiveness at the firm level, and I present a theoretical model, detailed through hypotheses.

Third, I present a cross-sectional research design to test the framework.

Fourth, I implement the design on a sample of firms belonging to the airline industry, which maintain a frequent buyer program for managing customer relationships.

Fifth, I discuss the results and the implications of the findings for theory and practices, highlighting the limitations of this study and the directions of future research.

Chapter 2

Literature review

2.1. Conceptualizing CRM effectiveness

Relationship marketing scholars argue that an effective marketing program should not limit the firm's efforts in attracting new prospects, but should be even more oriented toward maintaining and enhancing relationships with customers (e.g. Berry, 1983; Gronroos, 1990; Morgan and Hunt, 1994). Namely, while increasingly competitive environments make extremely expensive to compete on new customers (Morgan and Hunt, 1994), developing relationships with already existing buyers allow firms to reduce marketing investments and to maximize their return (Fornell and Wernerfelt, 1987), therefore increasing the actual value of revenues (Reichheld and Teal, 1996).

Notwithstanding a wide body of studies having developed theoretical and empirical contribution for a relationship marketing paradigm, however, a well established approach to conceptualize and measure the effectiveness of the relationship marketing effort has not been developed yet (Parvatiyar and Sheth, 2000).

A first approach to develop the concept of effectiveness has been to focus on the dyad as a level of analysis. Some scholars following this approach have pointed on the dyadic behavioral outcome of the relationships, focusing on the relationships satisfaction, which capture how both sides of the dyad perform in satisfying the counterpart (Biong et al., 1996). Other scholars have focused on relationships as intangible resources (e.g. Hunt, 1997), therefore expressing effectiveness in terms of relationship equity (Bharadwaj, 1995; Peterson, 1995), which value can be estimated through financial models (e.g. Srivastava et al., 1999).

A second approach has been to focus on the customer as a level of analysis, by aggregating customer-based measures for a given portfolio of customer relationships in order to assess effectiveness at the firm-level. Two streams of researches can be distinguished under this approach.

First, a wide body of studies has conceptualized CRM effectiveness in terms of the customer's behavioral response to firm's investments in the relationship. The implementation of a relationship management program imply the investment of resources in order to develop

a relationship specific effort – which I label customer relationship effort⁷ – that goes beyond the simple exchange transaction and is aimed at enhancing the customers' repeated purchasing behavior. Accordingly, the effectiveness of customer relationship management is reflected in the behavioral response induced in the customer by the relationship marketing effort (Sharp and Sharp, 1997). CRM effectiveness at the firm level can be therefore conceptualized as the aggregated behavioral response of all customers of a given firm to the customer relationship effort, which is reflected in the CRM or loyalty programs.

Drawing from previous research on brand loyalty (Jacoby and Chestnut, 1978; Jacoby and Kyner, 1973), many scholars have conceptualized such effectiveness in terms of behavioral customer loyalty, which is defined by a purchasing behavior repeated over the time with the same seller (e.g. Sharp and Sharp, 1997). Two main dimensions underlie this conceptualization. The first is the duration of the relationship linking the customer and the seller. Scholars focusing on this dimension have typically operationalized effectiveness in managing customer relationships in terms of customer lifetime, expressing the length of the period through which exchanges occur between the customer and the seller, or in terms of customer retention, expressing the share of customers who remains the same in the total seller's customer base over a given period (e.g. Bolton et al., 2000; Reichheld and Teal, 1996; Reinartz and Kumar, 2000; 2003, Verhoef, 2003).

The second is the intensity of exchanges between the buyer and the seller. Scholars focusing on this dimension have typically operationalized effectiveness in managing customer relationships in terms of frequency of customers' purchases, absolute volume of customer's purchases, price sensitivity, or share of customers' wallet allocated to the seller in a given category of products/services (e.g. De Wulf and Odekerker-Schroeder, 2003; Magi, 2003; Reinartz and Kumar, 2002; Sharp and Sharp, 1997).

While these approaches are widespread in the behavioral loyalty literature, however, little research has so far considered both dimensions together. Recent studies have indirectly pointed on this limitation, by observing that one-dimensional measures based on behavioral loyalty may lead to misleading evaluation about what relationships are the most valuable for a

⁷ The customer relationship effort, which includes tactics such as direct mailing, preferential treatments and tangible rewards, can be defined as an effort which *“is intended to contribute to the consumer's perceived customer value above and beyond the core product and/or service efforts received, and that can only be perceived by the consumer after continued exchange”* (De Wulf and Odekerken-Schroder, 2003, p.96).

firm. Specifically, long-life customers who are light buyers can be less profitable than short-time customers who are instead heavier buyers (e.g. Dowling, 2002; Reinartz and Kumar, 2000; 2003). Namely, customer loyalty can be displayed through different patterns of behaviors (e.g. Jacoby and Chestnut, 1978), which collectively can be an expression of a strong buyer-seller relationship, but may be not individually sufficient to assess which relationship is more worth of investment for a given firm. Therefore, effectiveness in managing customers should be better assessed taking into account both constructs pertaining the duration and constructs pertaining the intensity of the buyer-seller relationship.

To overcome this limitation scholars have recently started to adopt multi-dimensional constructs, trying to assess both the long-term focus which highlights a committed relationship and the concentration of buying behavior which highlights the potential value for the seller who invest in the relationship through the CRM effort (De Wulf and Odekerken-Schroder, 2003, Pritchard et al., 1999; Sirohi et al., 1998).

Second, an emerging body of researches has instead conceptualized CRM effectiveness through customer-based performance measures, which account for the revenue associated to customer relationships. Scholars have referred to this approach as a customer equity management (Blattberg and Deighton, 1996; Blattberg et al., 2001; Wayland and Cole, 1997), which can be defined as a *"dynamic ,integrative marketing system that uses financial valuation techniques and data about customers to optimize the acquisition of, retention of, and selling of additional products to a firm's customers, and that maximizes the value to the company of the custom relationship throughout its life cycle"* (Blattberg et al., 2001, p.3).

The customer equity approach shifts the focus from the evaluation of the customer's behavioral response to the marketing effort toward a performance analysis, which evaluates costs and revenues associated to the management of customer relationships. Moreover, the customer equity approach moves beyond the profitability of a customer relationship deriving from the exchange of a given product or service, by including also the value potential of selling additional products and services to the same customer in force of the existing relationships (*add-on selling*, Blattberg et al., 2001, p.95).

The customer equity framework shares with the latter approach on behavioral customer loyalty the notion that firms are effective in managing customer relationships when they are able to maximize the value deriving from these relationships along two dimensions, the duration and the intensity of the buyer-seller relationship, which jointly defines the revenue

component. It differs however from previous approaches in that it does not focus on the purchase behavior, but it points instead on the customer-level financial outcome, by explicitly accounting both for revenues deriving from customer relationships and for costs which can be directly attributed to the customers toward whom the relationship effort is directed.

Such a broader view of CRM effectiveness is receiving a growing attention in the literature⁸. However, by focusing both on costs to establish and develop the customer relationships it suffers of a main limitation, which is an under-specification of what costs should be included as directly related to the relationship marketing effort, and how costs should be distributed along the relationship life cycle.

Table 1 – Effectiveness in managing customer relationships

TYPE OF OUTCOME	LEVEL OF ANALYSIS		
	<i>Dyadic</i>		<i>Customer</i>
<i>Behavioral</i>	Relationship satisfaction	<ul style="list-style-type: none"> • Biong et al., 1996 	Behavioral customer loyalty <ul style="list-style-type: none"> • Bolton et al., 2000 • De Wulf and Odekerken-Schroder, 2003 • Magi, 2003 • Pritchard et al., 1999 • Reichheld and Teal, 1996 • Sharp and Sharp, 1997 • Sirohi et al., 1998 • Verhoef, 2003
<i>Economic</i>	Relationship equity	<ul style="list-style-type: none"> • Bharadwaj, 1995 • Peterson, 1995 	Customer equity <ul style="list-style-type: none"> • Blattberg and Deighton, 1996 • Blattberg et al., 2001 • Wayland and Cole, 1997

2.2. Theories about embeddedness of economic behavior

The argument that economic action takes place in a context of social relationships that influence how individual behave is not new in the social science. Namely the debate about the impact of the relational context on economic exchange has been fueled for a long time by the opposition between economics scholars and sociologists.

⁸ See for instance Thomas et al. (2003) and Gupta and Kumar (2003), papers presented at the IMS Conference 2003, University of Maryland.

While economists from the utilitarian tradition postulated individual action as atomized and independent from the context of social relationships where it takes place, considering the social context as a friction in the market, sociologists instead considered individual behavior as mechanically determined by the social context (Granovetter, 1985). As Granovetter remarked by citing Duesenberry, "*economics is all about how people make choices; sociology is all about how they don't have any choices to make*" (Duesenberry, 1960, p.233; Granovetter, 1985).

Embeddedness theorists propose a mediation between these positions (Granovetter, 1985; Polanyi, 1957; Schumpeter, 1950; Uzzi, 1997)⁹.

Releasing the assumption of independence from the social context, they challenge the sociology determinism, claiming that the *oversocialized* view of action (Duesenberry, 1960) does not differ in its approach from the *undersocialized* (Parsons, 1937) and atomized perspective of the utilitarian research tradition (Granovetter, 1985). Once it is known what type of social influence affects individual's behavior, for instance the social class, the race, the level of instruction, social relations do not even influence the specific action. The actor still behaves on the basis of the given decision rule, similarly to the *homo economicus* who maximizes the utility function. (Granovetter, 1985). From the viewpoint of embeddedness theorists, on the contrary, social relations are unequally distributed in the environment, displaying networks of relationships that "*penetrate irregularly and in different degrees in different sectors of economic life*" (Granovetter, 1985, p.491). Networks of relationships are a source of heterogeneity, in that they produce trust and discourage malfeasance, providing actors with reliable information that facilitates exchanges; but networks can also derail exchanges, because they put actors in a vulnerable position toward trustees, they enable power of influence through teams of linked actors, giving way to large scale conflicts that are far more influent than dyadic disputations. As a consequence, individual behavior needs to be examined by reference to the specific nature and pattern of relations where is embedded in.

This approach was initially applied to inter-firm relationships, to address the issue of why business relationships rarely approximate the spot-market conditions, being instead frequently merged with multiple relationships among actors. The embeddedness perspective suggests an

⁹ The social context is defined as a social network, i.e. "*a set of nodes (e.g., persons, organizations) linked by a set of social relationships (e.g. friendship, transfer of funds, overlapping membership) of a specified type*" (Laumann et al., 1978, p.458; Gulati, 1998).

explanation alternative to the TCE theory (Williamson, 1975; 1979; 1981; Williamson and Ouchi, 1981), proposing that the expected behavior induced by network structures of relationships can be a superior mechanism of governance as compared to the hierarchy (authority): it is the existing structure of relationships that link actors together which gives way to different level of order and disorder both inside and outside the firm. (Granovetter, 1985).

Grounding on Granovetter's work, a wide array of studies extended the embeddedness argument to inter-firm relationships in various research settings, like industrial districts (e.g. Lazerson, 1995) and distribution channels (Moorman et al., 1992), and to several research issues, such as inter-firm exchanges (Uzzi, 1997), capabilities acquisition (Dyer and Singh, 1998; McEvily and Zaheer, 1999), alliance formation (Gulati, 1995), acquisitions (Palmer et al., 1995), organizational survival and adaptation (Baum and Oliver, 1992; Uzzi, 1996), and finally firm performance (Rowley et al., 2000).

Strictly defined, embeddedness should be considered as a state of individual behavior, and specifically economic behavior, as influenced by the pattern of existing relationships with the context of action (Granovetter, 1985; Marsden, 1981, Uzzi, 1996)¹⁰. However, given that the state of influence is not identifiable by itself, but instead depends on the pattern and characteristics of relationships (Granovetter, 1985), most researchers have defined the concept of embeddedness in terms of causes of influence, focusing on the structural and relational properties of the network of relationships that link an actor to the social context. Under this view, embeddedness identifies the pattern of network relationships conditioning the actor's economic behavior (Granovetter, 1992; Gulati, 1995; 1998). More specifically, embeddedness can be identified along two dimensions: the relational characteristics of the network and the structural characteristics.

The relational embeddedness is defined by the properties of direct ties that link an actor to the network, like frequency of interaction, goal convergence, trust between partners (e.g. Simsek

¹⁰ The concept could be identified by contrast to the independency from the context, which is assumed to hold in economics theories, and to the mechanical dependency, which is argued to apply at economic behavior by sociological theories. It is, in other term, a state of partial conditioning that affects the action of individuals (Romo and Schwartz, 1995), which is influenced (Granovetter, 1985) by whom individuals are connected and how they are connected with the environment (Marsden, 1981; Uzzi, 1997).

et al., 2003). It emphasizes the role of immediate cohesive relationships as mechanisms for accessing information and resources (Gulati, 1998, p.296).

The structural embeddedness is defined by the characteristics of the whole structure where actors are embedded, like centralization, cohesion, or hierarchy (Simesk et al., 2003). It emphasizes the benefits in terms of information flows and control deriving from occupying a specific position in the network (Gulati, 1998).

Embeddedness theories have been developed along these two dimensions of the concept, claiming that whom actors are connected and how they are connected to the social context affect their access to resources and their ability to control resource flows in the network (e.g. Granovetter, 1992). Here, I present a brief literature review on five embeddedness approaches that further specify the argument: the centrality, the structural holes and the closure perspectives on network position, and the strength-of-weak ties and *philos* perspectives to network ties.

Structural embeddedness

Structural network theories argue that embeddedness consequences are a function of an actor's position in the structure of relationships (Gulati, 1998). Such consequences are primarily of two types: access to information and resources, and control over exchange flows in the network (Burt, 1992; Cook and Emerson, 1978).

Three main theoretical frameworks have focused on the relationship between network structure and resource access and control advantages: the prominence perspective (e.g. Ibarra, 1993), the structural holes perspective (e.g. Burt, 1992) and the closure perspective (e.g. Coleman, 1988)¹¹.

The first approach is based on the notion of centrality (Ibarra, 1993) and is grounded on the resource-dependence theory (Pfeffer and Salancik, 1978). The argument is that access to valuable resources and power derive from occupying a prominent position in a hierarchical structure (Knoke, 1990). The underlying rationale is that a central position in the relationship structure increases the likelihood and the extent to which an actor accesses strategic resources (Tsai, 1998; 2001), as well as the power over the existing contacts (Ibarra, 1993). Social network researchers have focused on the construct of centrality to address this issue, providing convincing evidence as regards to its consequences in multiple inter-organizational

¹¹ See for an exemplification Figure 1 and Table 2 and the related footnote.

research settings (Powell and Smith-Doerr, 1994). Centrality in the network is related to the introduction of new managerial practices (Westphal et al., 1997), early adoption of corporate strategies, (Palmer et al., 1993), external resource acquisition (Tsai, 1998), and product innovation (Powell et al., 1999), ultimately affecting firm's performance (Baker, 1990; Podolny, 1993; Powell et al., 1999; Tsai, 2001). A wide array of instruments has been also produced in the literature to measure centrality (e.g. Bonacich, 1987).

A second positional perspective is proposed by the structural holes theory, which posits that informational and control advantages rest mainly in actors who connect nodes otherwise disconnected, because their position allows brokerage opportunities (Burt, 1992).

The structural holes argument draws from three different domains (Burt, 1997). First, it is grounded in sociological studies of Simmel (1955) and Merton (1957) on the autonomy which actors derive from being mediators of conflicting positions – Simmel's notion of *tertius gaudens*. Second, the approach draws also from social network researches on structural autonomy (Burt, 1980) and betweenness centrality (Freeman, 1977) as a predictor of bargaining power. Finally, the framework shares a common perspective with economics theories about competitive advantages stemming from monopolistic and oligopolistic positions.

The general assumption of the theory is that networks are conducive of information and resources. The premise is that unconnected actors are likely to possess bundles of non-overlapping information and resources: holes in the structure act like *buffers* among actors. The claim is that ties that span the hole are then are a privileged channel of information and a source of power for actors that bridge the opposite sides of the network (Burt, 2000a). The underlying rationale is that if an actor is the almost unique path of connection among nodes in the network, he can derive from its positions two types of benefits: informational benefits, because he can act as a broker of non-redundant information which other actors can not access; control benefits, because he can shape the information flow through the structure, developing *tertius* strategies in moving non-redundant¹² information across the network (Burt, 1992).

¹²Redundancy is a central concept in structural holes theory. Redundancy in network relationships means that actors have overlapping information and potential substitutes, and is determined by two conditions, the cohesion of relationships among actors and the structural equivalence of their positions. The first is an indicator of the

The structural holes theory finds support in a wide set of studies (for a review see Burt, 2000a). In inter-organizational settings, non-redundancy has been proved to affect innovation (Tsai and Goshal, 1998), firm growth (Sorensen, 1999) and survival in IPO (Podolny, 2000). A similar argument is also made in studies on absorptive capacity, finding a positive relationship with the number of key contacts in the sales network (McEvily and Marcus, 2000). In inter-firm networks, non-redundancy influences organizational units' capability to share and combine resources, affecting innovation outcomes (Tsai and Goshal, 1998). Evidence from geographic clusters shows that sparsely connected networks impact positively on firm's effectiveness in quality management and scanning of competition: specifically, non-redundancy in relationships improve firm's market knowledge and widen the exposure to opportunities for learning (McEvily and Zaheer, 1999). These results support the argument that networks allow access to resources and know-how that cannot be produced internally (Larson, 1992; Nohria, 1992)¹³.

The brokerage argument is similar to the prominence perspective in that both see the source of advantage in a relative difference between the position of the focal actor and the position of its contacts: in the first case the actor is an exclusive path between two disconnected subset of the network, while in the second case the actor is the most connected node in the network. However, the underlying rationale of the source of advantage remains different: in the brokerage perspective the advantage comes from having a privileged access to resources and rests in a bargaining power (Burt, 1992), whereas in the prominence perspective it comes from accessing many resources and it comes from the informal hierarchy of the network structure (Ibarra, 1993): in other terms, the first is an argument of quality of social capital, where the second is an argument of quantity of social capital (Koka and Prescott, 2002). However, the two perspectives have often been mixed: as mentioned before, the non-redundancy argument shares a common view with that of betweenness centrality, which considers network outcomes depending on the extent to which a given actor connects nodes

density of connections for a set of actors, which gives way to information and resources sharing; the second is an indicator of similarity of positions, signaling that actors rely on the same sources of information and resources.

¹³These results also share a common view with the research agenda of the IMP program, which points on collaborative ties as a way to share research and development resources (e.g. Axelsson and Easton, 1992; Hagg and Johanson, 1982; Hakansson, 1987); however, they differ from this latter perspective is the emphasis posed on the structural dimension.

otherwise disconnected (Freeman 1977). Namely betweenness centrality has been considered as an indicator of the presence of structural holes (e.g. Burt, 2000a; Gargiulo and Benassi, 2000). I make the point that such overlap lays mainly in the heterogeneity of criteria adopted in the social network literature to define centrality in the structure, and that a theory of embeddedness should distinguish between the concept of centrality and the concept of brokerage as a source of advantages. The first one should emphasize the volume of actors accessed more than how they are connected, and should be appreciated through measures as the degree centrality (Freeman, 1977). The second one should emphasize the non-substitutability of the focal actor, which depends on how the actors accessed are linked to the network more than on the volume of actors accessed by itself, and should be appreciated through measures such as the betweenness centrality (Freeman, 1977) or the structural holes measure of constraint as an indicator of redundancy (Burt, 1997).

The third structural approach identifies the mechanisms influencing individual behavior in the cohesion of the network structure: the more structures of relationships are connected, the more actors are able to share common information, to produce social norms and sanctions over other actors in the network, therefore exercising a social control (Coleman, 1988; 1990). The main premise of this theory is that a contact constitutes a resource for an actor by the extent to which its behavior can be enforced toward a given direction. Structures then are effective by the extent to which they develop norms of behavior and sanctions for who deviates from the norm. The cohesion perspective to network structures proposes that such condition is verified when closure – i.e. redundancy – exists among actors, i.e. when all actors are connected each other. The underlying rationale is that closure acts as a social mechanism of enforcing behavior: the wider is the control over each actor, the lower is the incentive for each actor to cheat. Closure then promotes trust and cooperative exchanges, which are particularly useful when firms seek to access critical resources (Podolny and Baron, 1997). Most scholar so far have considered the closure perspective and the structural holes approaches as competing arguments of structural holes, since the closure perspective claims that redundancy is positively related to social capital, while Burt's argument is that redundancy is negatively related to social capital (Rowley et al., 2000). However, recent researches suggest that a contingency view of structural embeddedness might be adequate in various research settings, according to the environmental conditions and the given task of the

actors. Research in intra-organizational environments points on the trade-off between closure, which enhance flows of resources among actors because of the safety provided by a cross-linked relational environment, and non-redundancy, which facilitates adaptation to changes in the task environment (Gargiulo and Benassi, 2000). Similarly, a contingency argument is made by Rowley and colleagues, who argue that non-redundancy effects in inter-organizational networks are contingent to industry characteristics: when exploration of new opportunities is requested, non-redundancy is positively associated with firm performance, where the opposite holds for exploitation-demanding environments (Rowley et al.,2000). Podolny and Baron develop a framework which account for the specific content of relational ties, arguing that effects of network structures are contingent to the characteristics of the exchange relationships: non-redundant structures are conducive to the extent that actors exchange information and resources, but cohesive structures are preferable when ties convey normative expectations (Podolny and Baron, 1997).

Grounding on these works, Burt has recently attempted an integration between the two perspectives, pointing on the differences in the benefits provided by high-redundant and low-redundant structures. Specifically, non-redundancy should allow firms to gain access to valuable resources, providing a ground for exploration, but closure plays a key role in allowing the exploitation of the accessed opportunities, because it enhances collaboration among partners (Burt, 2000b).

Relational embeddedness

Relational embeddedness theorists claim that networks affect actors' economic behavior primarily through the characteristics of the direct relationships they maintain with other actors.

There are two competing arguments on this issue.

A first approach focuses on the tie-strength as the key feature of the relationship which provides advantages. According to Krackhardt (1992), the most relevant ties in a network of

relationships are *philos*¹⁴ relationships, i.e. *strong, affective, and time-honored* relationships which enable actors to mobilize resources in order to achieve economic goals¹⁵.

Strong relationships provide actors with two main types of benefits (Rowley et al., 2000).

First, by allowing a better understanding between partners, they enhance the transmission of high-quality information (Uzzi, 1996) and tacit knowledge (Larson, 1992). Second, by enhancing cohesion, trust and long-term cooperation, strong ties act as governance mechanisms which bind actors behavior according to social norms (e.g. Larson, 1992; Powell, 1990), being more effective in resource transmission (e.g. Kale et al., 2000).

Strong ties have been proved to be effective when actors are high-sensitive on sharing resources (Rindfleisch and Moorman, 2001): higher levels of cooperation in inter-organizational settings stem from relationships based on strong ties (Gulati, 1998; Hansen, 1999; Uzzi, 1999). A similar argument is made also in consumer behavior research on word-of-mouth, where ties ability to transfer information has been found to be contingent to information characteristics: when information is free from moral hazard, actors share information through both strong and weak ties, where information present hazard, they tend to rely on strong ties (Frentzen and Nakamoto, 1993). In the same settings, Johnson Brown and Reingen find that strong and weak ties play can play a different role: where weak ties tend to connect distinct group of referrals, allowing information to flow in the macro-structure, strong ties are activated at the micro-level, resulting more influential for consumer's decision and for related products (Johnson Brown and Reingen, 1987).

The second approach to relational embeddedness stems from Granovetter's work on the *strength-of-weak-ties* (Granovetter, 1973).

¹⁴ In Krackhardt's framework, a *philos* relationship is defined by three elements: interaction among the actors, which provides opportunity for accessing and exchanging resources; affection, which is related to reciprocity in the relationships, and time, which account for path-dependency in the development of the relationship.

¹⁵ Evidence for Krackhardt's argument is provided by a case study on an entrepreneurial small firm: by studying the antecedents of the refusal decision for a Union certification campaign, Krackhardt found that such decision was influenced by people rich in *philos* – i.e. the actor's strong ties set – more than by people rich in the advice network - i.e. the actor's weak ties set (Krackhardt, 1992).

According to this view, the most critical conduits for information and resources are the weakest relationships among nodes, since they provide novel and non overlapping resources which are not already shared among strongly connected actors.

The *strength-of-weak-ties* theory assumes that a positive correlation exists among the strength of relationships developed by dyads in a set of actors: if A maintains two strong ties with B and C, it is unlikely that also B and C were not tied together (the *forbidden triad*). The plausibility of this assumption is endogenous in the concept of tie strength, which is defined as a function of the amount of time spent in the relationship, the emotional intensity, the level of intimacy (mutual confiding) and the reciprocal services between tied actors (Granovetter, 1973, p.1361).

The premise of the theory is that the macro structure of the network is related to the characteristics at the micro level of the dyadic tie: the weaker is the relationships between A and B, the smaller is the portion of network relationships that A and B shares, making the A-B tie a bridge between poorly connected subset of the network¹⁶.

It follows the claim that the most relevant information flows across weak ties, which are bridges linking “*otherwise disconnected social cluster into a broader society*” (Burt, 1992, p.26). The underlying rationale is that weak ties are essential conduits for the flow of newer and non-overlapping information which is not already available in the strong-tie environment. On the other side *strong ties, breeding local cohesion, lead to overall fragmentation* (Granovetter, 1973, p.1378), in that they insulate actors in circling relationships.

Evidence is provided by Granovetter through an analysis of mobility in careers on a sample of job changers at Boston: information about new job opportunities is more likely to be accessed through acquaintances than from family member, contrasting the traditional argument that closely linked people should be the most motivated to provide information about new jobs (Granovetter, 1973). The argument exerted a notable influence in network studies and found a wide support in subsequent researches (Granovetter, 1982), which focused mainly on inter-

¹⁶ Such assumption finds also support in empirical evidence that strongly connected individual are likely to be more similar than disconnected ones (e.g. Precker, 1952), from what it can be inferred that actor linked to the same node, being similar, are likely to be also connected between themselves (Granovetter, 1973, p.1362). Evidence from marketing research on consumer behavior also provided consistent evidence with this assumption, finding a structural tendency of strong ties to group in cluster (Frenzen and Nakamoto, 1993).

personal networks, but extended the theory also to organizational (e.g. Hansen, 1999) and inter-organizational settings (e.g. Uzzi, 1999).

At the same time its plausibility has been questioned from different viewpoints.

First, it has been observed that findings of strength-of-weak-ties studies are critically dependent from the specific conceptualization of tie-strength, which renders problematic to establish a threshold value for distinguishing strong from weak ties (e.g. Krackhardt, 1992)¹⁷: effects of relational embeddedness can vary when different conceptualizations of strength-of-tie are developed, and for different types of information flows (Rindfleisch and Moorman, 2001). Moreover, in some circumstances non-redundancy exists also among strongly connected individuals (Reingen, 1994), and strong ties can be also conducive of non-redundant information (Achrol and Kotler, 1999). Second, it has been observed that the weak tie argument merges a relational approach with a structural approach to embeddedness (e.g. Rowley et al., 2000). According to Burt, more specifically, the weak tie can be considered as a correlated of the structural holes phenomenon, which captures more properly the causal agent of the advantage in accessing information and resources (Burt, 1992, p.27, 30). Following this reasoning, scholars argued that the explanatory power of a strength-of-weak-ties argument increases when considering the joint effect with structural embeddedness, providing a basis for a contingency theory of embeddedness (Rowley et al.,2000).

Summary on key findings in embeddedness research

Since Granovetter's findings that weak relationships, which bridge information across individuals, are more effective than strong relationships in redundant environments (Granovetter, 1973), embeddedness theories have been developed in a wide array of studies. Scholar focused both on different level of analysis such as inter-personal networks (Podolny and Baron, 1997), intra-organizational networks (Hansen, 1999), inter-organizational networks (Ahuja, 2000); and different research settings, such as high technology intensity vs.

¹⁷ In fact the notion of tie-strength is qualified by characteristics *per se* implying that a *forbidden triad* exists: for instance, if having a strong tie for A with B and C means that A spends a high proportion of its time with both B and C, it is implied by the definition that B and C will be likely to spend time together, i.e. to have a tie and to have access to overlapping resources.

low technology intensity industry (Rowley et al., 2000), geographic clusters (McEvily and Zaheer, 1999), financial industries (Uzzi, 1999).

These studies have provided convincing evidence about Granovetter's argument that economic action is embedded in a web of relationships: structural and relational modalities are a source of heterogeneity in competitive and economic outcomes, which can be crucial for economic actors' survival in the competitive environment (e.g. Podolny, 2000). Empirical results highlight multiple benefits from being embedded in a network, varying according to different network configuration: for instance prominence is positively associated with volume-related outcomes, non-redundancy to resource diversity and flexibility, and tie strength with access to private resources, while weak ties are more effective to access public information (see Table 2 and 3).

Notwithstanding this diffusion, however, it seems that Uzzi's claim that "*a well-defined theory of embeddedness has yet to emerge*" (Uzzi, 1997) still holds.

While current literature has proposed alternative arguments and supporting evidence for relational as well as structural embeddedness, less efforts has been devoted until now (1) to compare these arguments in a homogenous research setting and (2) to integrate structural and relational embeddedness in a more comprehensive theory of embeddedness.

A comparison of different arguments could be useful in order to test the explanatory power of the different theories because it allow to keep constant the research settings characteristics, which appear to be highly heterogeneous in previous studies addressing specific embeddedness theories, implicitly considering networks between individuals equal to networks between groups or between organizations. At the same time, an integration of the relational and structural perspectives seems worth of attention in that both previous theoretical development and empirical evidence suggest that the two dimensions of the concept interact in determining embeddedness consequences. Specifically, there is evidence that strong ties and closure are alternative mechanisms of social control, which need to be associated to account for embeddedness effects (Rowley et al., 2000). Namely when strong ties are coupled with non-redundant structures actors seems to enjoy higher benefits (Krackhardt, 1992; Rowley et al., 2000). Moreover, support for an interaction between relational and structural embeddedness comes also from recent studies on prominence: specifically, social capital results positively related to eigen-vector centrality, which is an operational measures accounting both for centrality and tie-strength (Koka and Prescott, 2002). These findings

point to a still open debate in network theories: are bridges through which resources flow in non-redundant structures weak as Granovetter proposes, both weak and strong (McEvily and Zaheer, 1999), or strong as these last results seems to suggest?

Table 2 – Embeddedness consequences: competing arguments

Prominence	Sett	Structural Holes	Sett	Closure	Sett	Weak ties	Sett	Strong Ties	Sett
Access to external resources (Tsai, 1998; 2001)	ITON	Access to capabilities (McEvily and Zaheer, 1999)	IFN		IFN	Access to information (Granovetter, 1973)	IFN	Access to high-sensitive information and resources (Rindfleisch and Moorman, 2001)	IFN
		Capability to exchange and combine resources (Tsai and Goshal, 1998)	IFN					Access to hazardous information (Frentzen and Nakamoto, 1993)	IPN
Product Innovation (Powell et al., 1996)	IFN	Innovation outcomes (Tsai and Goshal, 1998)	IFN					Capability to exchange and combine resources (Tsai and Goshal, 1998)	ITON
Performance (Powell et al., 1999)	IFN	Organization Survival (Podolny, 2000)	IFN					Knowledge acquisition (Kale et al., 2000)	ITON
		Growth (Sorensen, 1999)	IFN						
Power of influence over resource flows (Ibarra, 1993)	IFN	Brokerage power among holes (Burt, 1992)	IFN	Power of influence over individual deviations from social norms (Coleman, 1988)	IFN		IPN	Power of influence in collective decisions (Krackhardt, 1992)	IPN

IPN: Inter-personal networks; IFN: Inter-firm networks; ITON: Intra-organizational networks

Table 3 – Embeddedness consequences: multidimensionality and contingencies

	Prominence	Sett	Structural Holes	Sett	Closure	Sett	Weak ties	Sett	Strong Ties	Sett.
Multidimensionality			Flexibility in adaptation (Gargiulo and Benassi, 2000)	IPN	Individual safety (Gargiulo and Benassi, 2000)	IPN				
			Information and resources access (Podolny and Baron, 1997)	IPN	Normative expectations (Podolny and Baron, 1997)	IPN	Access to information (Johnson Brown and Reingen, 1987)	IPN	Influence on decisions (Johnson Brown and Reingen, 1987)	IPN
	Information volume (Koka and Prescott, 2002)	IPN	Information diversity (Koka and Prescott, 2002)	IPN					Information richness (Koka and Prescott, 2002)	IPN
							Access to information (Uzzi, 1999)	IPN	Share of Private Resources (Uzzi, 1999)	IPN
			Access to valuable opportunities (Burt, 2000b)		Lower risk of transaction and trust (Burt, 2000b)		Search of Information (Hansen, 1999)	ITON	Transfer of complex knowledge (Hansen, 1999)	ITON
Contingencies			(-) Number of peers in the competitive environment (Burt, 1997)	IPN						
	Country of origin (Koka and Prescott, 2002)	IPN	Country of origin (Koka and Prescott, 2002)		Exploit/Explore demanding environments (Rowley et al, 2000)	IPN	Exploration demanding environments (Rowley et al., 2000)	IPN	Nonredundancy (Rowley et al., 2000)	IPN
			Tie strength (Krackhardt, 1992)	IPN						

IPN: Inter-personal networks; IFN: Inter-firm networks; ITON: Intra-organizational networks

2.3. Previous research on complementarity effects in collaborative ties

The notion of complementarity refers to a specific property of a given asset (or firm), which is typically defined by reference to another asset (or firm): more specifically, an asset A is said to be complementary of an asset B when an increase in A positively affects the returns of an increase in B (Milgrom and Roberts, 1995).

A wide body of researches both in management (e.g. Hamel, 1991; Harrigan, 1985; Madhok and Tallman, 1998; Teece, 1987) and marketing studies (e.g. Bucklin and Sengupta; Samu et al., 1999) has suggested that the outcomes of inter-firm ties are related to the complementarity of the resources that firms bring into the relationship¹⁸.

In management studies, effects of complementarity have been investigated in various inter-organizational research settings, mainly focusing on complementarity relationships among each firm's strategic assets and capabilities. In the stream of studies on mergers and acquisition, complementarity between the resource endowments of the merged firms has been considered as a source of synergies impacting on the post-M&A performance (e.g. Harrison et al., 1991). Similarly, researchers on strategic alliances argued that firms accessing complementary resources enlarge the potential of combination of the existing resource endowments, therefore generating higher returns than the sum of those that each partner can individually obtain (Dyer and Singh, 1998; Harrison et al., 2001). Inter-firm networks studies, instead, have mainly focused on complementarity as a source of inter-dependence among firms, which leads to the formation of network ties (e.g. Gulati and Gargiulo, 1999), while little attention has been paid so far at the effects of inter-firm network complementarities. A significant exception however is a recent work of Rowley and colleagues, where complementarity has been proved to be related to network structure stability at the clique level over the time (Rowley et al, 2003)

¹⁸ The notion of complementarity has been frequently associated to the notion of fit, which point on a mutual interaction of two or more components that complete each other's gaps in carrying out a task. For instance, strategic management research refers to complementarity of marketing-related resources as the "*extent to which different marketing capabilities fit each other and can thereby be transferred between the different market and products of the two firms*" (Larsson and Finkelstein, 1999). Similarly, marketing research on co-branding refers to the brand fit as the expected extension of one brand into the other (Prince and Davies, 2002).

In marketing studies, a wide variety of inter-firm complementarity effects have been investigated. For instance, in channel relationships, researchers have shown how complementarity between each partner's capabilities affects the dyad's behaviour, thereby impacting on the economic and competitive performance (Jap, 1999). Co-branding scholars argued that effectiveness of co-branded products depends on the compatibility between the two product categories – the product fit (Simonin and Ruth, 1998) – and on the consistency between customer's perceptions of the two brands – the brand fit (Keller, 1993; Prince and Davies, 2002). Cooperative advertising researchers have focused on how product complementarity, defined as the extent to which a consumer perceive the necessity of one product for the performance or use of the second product, interact with differentiation in advertising strategies (Samu et al., 1999). Findings show that assessing the degree of complementarity is a preliminary condition in order to define an effective joint advertising program: namely complementarity among co-advertised products or services affect the consumer information processing mechanisms which lead to the buying decision. Finally studies on joint sales promotions have identified a wide set of complementarities between products or services which can increase sales of partnering firms: for instance use and process complementarities are displayed when two or more products or services are needed in order to accomplish a given activity (e.g. a toothbrush and a toothpaste while cleaning teeth, a pot and a ladle for cooking); use time, seasonal or distribution complementarities are displayed instead when the consumption or purchasing occasions of two or two or more products or services overlap (e.g. cereals and orange juice during breakfast, disposable razors and batteries at a grocery retailing) (Varadarajan, 1986).

By conceptualizing complementarity as a property of filling the gap of a given counterpart, many scholars have defined complementarity in terms of diversity (e.g. Gulati and Gargiulo, 1999; Harrison et al., 1991; 2001; Hitt et al., 2000). The underlying argument is that the lower is similarity between two partners, the higher is the likelihood that they bring into the relationships non-overlapping characteristics: by reciprocally complementing the attribute profiles required for a given task, complementary partners therefore can deliver higher value. Such approach is based on the premise that similar partners are likely to the same set of characteristics, which are less useful to be integrated. For instance, firms that are offering to the same customer-base the same products are likely to gain poor benefits from collaboration, because their products are perceived as alternatives instead of complements. Instead, firms

that are offering to the same customer-base different products may benefit from collaborating in the marketing effort, since their customers may perceive higher value in a bundled offer of two products or services that they already buy and/or consume separately.

There are also studies where the notion of complementarity has been elaborated in terms of similarity instead of diversity. Specifically, co-branding scholars argued that the product fit depend on the closeness of the combined product categories (Simonin and Ruth, 1998) – and on the consistency between customer's perceptions of the two brands – the brand fit (Keller, 1993; Prince and Davies, 2002). Similarly, in cooperative advertising, products that have no link to each other are considered non-complementary, in that they require a greater effort in consumers' cognitive elaborations of the advertising effort (Samu et al., 1999). Such approaches are consistent with the research on brand extension (e.g. Aaker and Keller, 1990; Dacin and Smith, 1994; Park, Milberg and Lawson, 1991) and product bundling (Guiltinan, 1987; Harlam et al., 1995), which have proved that an effective fit is based on product category similarities.

Such apparent inconsistency can be solved by observing that two mechanisms jointly operate in defining how two different assets complement each other. The first is a diverse distribution of the attributes each asset is endowed in order to accomplish a given function. For instance, a toothbrush has some functional properties as well as a toothpaste, but neither of them is endowed by all attributes needed to cleaning teeth. The second is a similarity in the process where each asset is employed: for instance, a coffee and a liquor do not show complementary attributes, but they might be used during the same consumption occasion – a dinner, for instance –; a disposable razors and a battery have different functional destinations, but might be purchased together during the same shopping expedition.

So far, little research has so far focused on how these two mechanisms can be combined. Therefore, further research seems required in order to deepening our understanding about how similarity and diversity interplay in determining the degree of complementarity between two products or services, and more generally between two assets.

Table 4 – Complementarity in inter-firm collaborative ties: diversity vs. similarity

Contribution	Research stream	Focus	Underlying conceptualization
Gulati and Gargiulo, 1999	Strategic Management (Inter-firm networks)	Complementarity of resource endowments	Diversity of attributes
Harrison et al., 1991	Strategic Management (M&A)	Complementarity of resource endowments	Diversity of attributes
Hitt et al., 2000	Strategic Management (Strategic alliances)	Complementarity of resource endowments	Diversity of attributes
Simonin and Ruth, 1998 Prince and Davies, 2002	Marketing (Co-branding alliances)	Product fit and brand fit	Similarity of customers' information processing modalities
Samu et al., 1999	Marketing (Cooperative advertising)	Product fit	Similarity of customers' information processing modalities
Varadarajan, 1986	Marketing (Joint sales promotions)	Product complementarity	Diversity of attributes, similarity of purchasing and consumption processes

2.4. New directions of research followed in this dissertation

In this study, I focus on four of the previously identified limitations in current research: first, the heterogeneity of conceptualizations for CRM effectiveness, which leads to operational constructs that do not accurately capture the composite effect of the duration and the intensity of the customer base loyal behavior.

Second, the lack of understanding about the consequences of embeddedness in collaborative alliances for marketing effectiveness, and more specifically for CRM effectiveness, which leads to neglect the role of network structures in shaping the outcomes of a firm's marketing activities.

Third, the scarcity of contributions explaining how different dimensions of firm's embeddedness, namely the structural and the relational embeddedness, interplay in shaping the performance of network actors.

Fourth, the heterogeneity of conceptualizations for complementarity in inter-organizational relationships and more specifically in co-marketing alliances, which leads to operational constructs ranging from similarity to diversity as the underlying relative characteristics of complementary assets.

Finally, I further explore how the attribute-based view of complementarity effects can be integrated with the relational-based view of embeddedness consequences, by modeling the

interaction between complementarity in a firm's network and its position in the relational structure.

The conceptualization of CRM effectiveness

The first goal of this research is to assess CRM effectiveness by focusing on the customers' behavioural response to a firm's relational effort both in terms of the intensity and in terms of the duration of the loyal behavior. The purpose is to capture through an appropriate operationalization of the concept: (1) the depth of the existing relationships between the firm and its customer base, which is based on operational constructs such as the frequency of purchases, the absolute volume of purchases or the share of customers' wallet; (2) the stability of the existing relationships between the firm and its customer base, being based on the operational measures of lifetime and retention rate of the customer base (§.2.1).

The conceptualization of marketing complementarity

The second goal of this study is to extend the domain of the complementarity construct for marketing purposes. As I observed before, research on complementarity tends to seem inconsistent across different research settings, since conceptualizations of complementarity range between two apparently opposite concepts, namely the diversity and the similarity of the so-called complementary assets (e.g. Gulati and Gargiulo, 1999; Samu et al., 1999). In this research I extend the domain of the concept in order to embody both these components, and specify them for a notion of complementarity for marketing purposes. Specifically, the similarity component will refer to the customer base characteristics, as expressed by their lifestyle models (adapted from Prince and Davies, 2002) and by their purchasing and consumption processes regarding the partners' products and services (adapted from Varadarajan, 1986). The diversity component will refer to the characteristics of the assets that are needed in order to fulfill the task of the asset, which for a marketed products/service can be identified in the products/services attributes relevant for satisfying customers' needs (adapted from Samu et al., 1999).

The embeddedness approach to CRM effectiveness

The third goal of this research is to attempt to fill the gap of current studies in investigating antecedents of effectiveness in CRM outside the organizational boundaries, by bringing the embeddedness approach into the relationship marketing research stream.

I ground my research on previous studies on relationship marketing developed in the business-to-business research settings, which already suggested that the network of relationships where a focal dyad is embedded in influence the pattern of exchanges within the dyad (e.g. Anderson et al., 1994). However, I don't identify the network effects as a sum of single-relationships effects (e.g. Blankenburg et al., 1999), but instead I adopt a social network approach (e.g. Nohria, 1992; Salancik, 1995), pointing on the effects of structural as well as relational characteristics of the network. Moreover, I don't adopt the dyad as a unit of analysis, as it has been done in most of previous studies (e.g. Anderson et al., 1994), but instead I point on the firm level consequences of embeddedness, thereby attempting to provide further insights about firm's relationship marketing outcomes.

The interaction between relational and structural embeddedness

The fourth purpose of my research is to contribute to the emerging view of the relational and the structural embeddedness causal mechanisms as inter-related in explaining outcomes from network membership. As I noted before, underlying the two main argument on relational embeddedness are models which implicitly include structural effects (Granovetter, 1973; Krackhardt, 1992). However, little research directly addressed this issue so far. Either studies which explicitly hypothesized interaction effects have operationalized relational embeddedness through measures which other studies adopted for structural effects: while considering relational embeddedness, namely, Rowley and colleagues have measured such construct through the number of strong ties and the number of weak ties, in fact adopting a measure which has been defined as the degree centrality, i.e. a measure for the construct of prominence (Bonacich, 1987; Rowley et al., 2000).

In this research, I develop alternative operational measures for relational embeddedness that are one-dimensional and account for the relational intensity, in order to insulate the tie-strength effect from the structural effect. Then I test my theory both for the expected main effect of relational and structural embeddedness and for interaction effects, focusing on the impact on effectiveness of the joint CRM program.

The interaction between marketing complementarity and embeddedness

Finally, a further step of this research will be to investigate how the embeddedness and the marketing complementarity mechanisms interact in affecting firm's effectiveness in CRM. Previous research on complementarity has not yet extended findings about complementarity

impact on performance from the dyadic relationship to the whole network of alliances where a firm is embedded. Nonetheless there are theoretical reasons to expect that embeddedness and complementarity interact in generating firm level outcomes. Namely the complementarity argument highlights that not all partner's attribute profiles are equally valuable for a given firm. At the same time the embeddedness argument highlights that not all firm's pattern of ties are identical in affecting the access to partners' attributes. It follows that the more the pattern of ties allow to access higher complementary partners, the more effective should be the cooperative strategy for the given firm. In other terms, complementarity and embeddedness are expected to interact in affecting how actors perform. This issue has been so far ignored both by the research stream on complementarity, which typically focused on a singular dyadic relationship (e.g. Samu et al., 1999) and in the research stream on social networks, which tended to consider relationships by themselves as the antecedent of firm performance, regardless attribute profile considerations (e.g. Scott, 1991). In this research, therefore, I will address this issue, by developing a theoretical model that focuses on the interaction effect between marketing complementarity and embeddedness.

Chapter 3

Theoretical Framework

In this chapter, I propose a theoretical model and a set of hypotheses about how firm's participation in CRM alliances affects its effectiveness in managing customer relationships.

For the purposes of this research I conceptualize CRM effectiveness according to the existing literature on behavioral customer loyalty (e.g. Reichheld and Teal, 1996; Sharp and Sharp, 1997). I choose the behavioral customer loyalty construct because (1) the level of analysis of this research is the firm, and therefore dyadic measures are inappropriate; (2) the focus of this analysis is on the direct effect of the CRM program on the consumers' behavior, more than on a synthetic performance evaluation where cost and revenue components might be influenced by factors other than the relationship effort.

I define CRM effectiveness as the impact that a CRM program has on the intensity and the duration of a customer base loyal behavior, where (1) the intensity of the loyal behavior expresses the extent to which a firm's customer base repeat and concentrate its purchases for a specific product/service at the given firm (e.g. De Wulf and Odekerken-Schroeder, 2003; Jacoby and Chestnut, 1978; Sharp and Sharp, 1997); (2) the duration of the loyal behavior expresses the extent to which a firm's customer base maintain a long-term relationship with the seller (e.g. Reichheld and Teal, 1996).

In order to investigate the antecedents of firm's effectiveness in managing customer relationships in the domain of its inter-firm collaborative ties, I first discuss shortly the theoretical premises of the model, making explicit the underlying assumptions; then, I present the model and discuss the hypotheses.

3.1. Theoretical foundations and assumptions

In current research, effectiveness in CRM has been typically conceptualized as a consequence of a customer relationship effort developed individually by a firm through a CRM or a loyalty program, with the purpose of achieving competitive as well as economic outcomes (e.g. De Wulf and Odekerken-Schroder, 2003).

When firms establish alliances to manage customer relationships, however, they coordinate their relationship efforts toward the customer base, with the purpose of enhancing the repeated patronage of customers toward the partnering firms (Sharp and Sharp, 1997). They develop joint advertising and sales promotions, and they design bundles of rewards and additional services, by differentiating the value proposition for customers engaged in the relational behavior against occasional customers. The consequent relational behavior of customers, expressing firm's effectiveness in managing customer relationships, does not depend therefore uniquely from how they relate individually to the customer base: instead, it is affected by the interaction between each firms' efforts, which expand the opportunities of creating value for customers (e.g. Varadarajan, 1986).

How does collaboration on a multi-firm relationship effort impacts on each firm's outcomes of CRM? In general, the argument developed in business-to-business research settings is that effectiveness of a business relationship between buyer and seller is affected by the embedded context within which it takes place (e.g. Achrol et al., 1983; Hakansson and Snehota, 1989; Frazier, 1983; Blankenburg et al., 1999). Specifically, the seller may be perceived as more attractive when its connectedness to the business environment increases, since maintaining a relationship with that seller means for the buyer accessing further opportunities given by the counterpart's network of connections (Anderson et al., 1994).

I ground my proposal on this research stream, in order to extend the claim to business-to-consumer relationships: specifically, I argue that firms embedded in CRM alliance networks increase their attractiveness toward the customer through CRM alliances, becoming more effective in managing customer relationships.

The underlying rationale of this argument is that customers engaging in a relational behavior with a given seller perceive to gain a greater value from maintaining and developing such relationship whenever it allows them to indirectly access further benefits and opportunities offered by the sellers' partners. Therefore, the *better* a given firm is connected to other firms which collaborate in the relationship effort toward a given customer, the higher is the value that the customer perceive to obtain for maintaining an engagement with that firm, and therefore the higher is the expected customer's behavioral response in terms of loyalty.

Embeddedness theories provide a possible explanation of what being *better* connected means. The embeddedness argument posits that whom economic actors are connected and how they are connected to the social context affect their effectiveness in pursuing a given goal:

effectiveness is in other terms a consequence of the pattern of inter-firm ties and their characteristics (e.g. Burt, 1992; Granovetter, 1985; 1992). Embeddedness theories are rooted in an open system perspective of the firm, which assumes that the environment is characterized by resource scarcity, and that actors establish exchange relationships with the environment in order to procure resources needed to survive (e.g. Lawrence & Lorsch, 1967; Thompson, 1967). The underlying assumption of embeddedness theorists is that actors behave under uncertainty conditions, establishing relationships in order to reduce such uncertainty by accessing scarce resources (Granovetter, 1985; Gulati, 1998).

By arguing that benefits actors obtain from embeddedness depend on *whom* they are connected in the network (Marsden, 1981; Uzzi, 1997), embeddedness theorists highlight that network partners are heterogeneous in their attribute profiles: specifically, they are not equally valuable in terms of the opportunities and resources they provide through network ties.

However, the embeddedness approach condenses the resource endowment in the social capital, i.e. in the pattern of relationships maintained by a given actor: in other terms, the resource endowment *is* the network of relationships (e.g. Nahapiet and Ghoshal, 1998), while little attention is generally paid to other attributes of network members.

However, if the rationale of embeddedness theories rests in the quest of resources of an open system that lack in some assets needed to perform, it seems arguable that not all partners' resources have the same relevance for an actor. I make the claim that this is an oversimplified view of network effects, since it assumes that the same resource flows in the whole network of relationships, while it does not consider that networks can be conduits of multiple and different resources and opportunities, being more or less effective according to the compatibility between those resources and the partners' attribute profile.

Since networks penetrate irregularly and in different degrees in the economic life (Granovetter, 1985), acknowledging that they give access to different resources should allow a better understanding of embeddedness consequences for *given* characteristics of the resource environments. Specifically, being *well* connected to firms that have a high complementary value proposition can be different from being *well* connected to firms that have a low complementary value proposition to propose to the market.

Such perspective brings back to Granovetter (1985), who warned from the risks of shifting from the determinism of economics theories to the determinism of an oversocialized view of economic behavior. But it is also implicit in part of social capital literature, when it

acknowledges that the value of embeddedness comes from the resources accessed by virtue of the existing relationships (Bourdieu and Wacquant, 1992), and therefore not only from the existing relationships *per se*.

In order to further investigate how firms can combine diverse resource endowments through network ties, therefore, I focus in the theoretical framework both on the pattern of relationships connecting firms among themselves – describing firm's embeddedness – and on the actors' attributes profiles compatibility – describing the complementarity among actors' attribute profiles –, specifically modeling the effects of embeddedness and complementarity on firms' effectiveness in managing customer relationships.

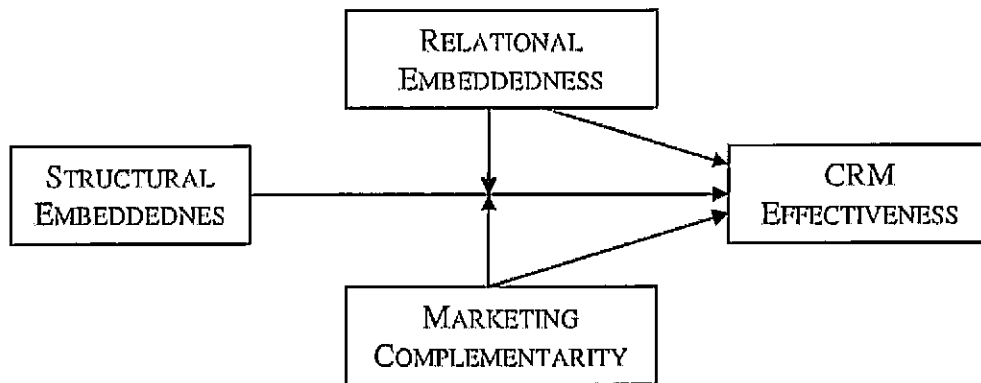
The argument is developed as follows.

First, I propose a structural embeddedness explanation of CRM effectiveness based on the prominence perspective (e.g. Powell et al., 1996; 1999). I discuss the competing arguments about non-redundancy effects on CRM effectiveness, drawing from structural holes (Burt, 1992) and closure (Coleman, 1988) approaches. Then, I propose a relational embeddedness explanation of CRM effectiveness by discussing the competing arguments about tie-strength effects on CRM effectiveness, drawing from the strength-of-weak-ties (Granovetter, 1973) and *philos* (Krackhardt, 1992) approaches.

Second, I point on the complementarity argument of inter-firm relationship for CRM effectiveness (e.g. Dyer and Singh, 1998; Samu et al., 1999), by extending the level of analysis from the dyad to the network of inter-firm relationships and by specifically pointing on complementarity for marketing purposes, which I label marketing complementarity.

Finally, I further develop the contingency argument of structural embeddedness by accounting for two moderating effects: relational embeddedness, which has been considered to interact with structural embeddedness in previous network studies on inter-firm alliances (Rowley et al., 2000) and inter-firm business complementarity, which has been considered to influence the effectiveness of inter-firm relationships at dyadic level both in marketing studies on advertising alliances (Samu et al., 1999) and in strategic management studies on strategic alliances (e.g. Dyer and Singh, 1998, Harrison et al., 2001).

Figure 1 – Theoretical Model



3.2. Embeddedness and CRM effectiveness

CRM alliance networks join multiple alliances that firms maintain in order to establish and enhance relationships with their customers, aggregating on a broader basis each partner's strengths in managing customer relationships.

In a CRM alliance network communicational, promotional and rewarding activities toward loyal behaving customers are combined, therefore impacting on consumers' evaluation about the preferential treatment and the incentives received as a reward for their loyal behavior. For instance multiple joint sales promotions for loyal customers should impact on consumers' benefits deriving from combined repeated purchases choices (e.g. Varadarajan, 1986). At the same time, multiple joint advertising plans for loyal customers should impact on how consumers process information about the effects of his loyal behaviour, highlighting the combined benefits and strengthening therefore the effectiveness of the communication tool (e.g. Samu et al., 1999). Finally, developing multi-partner reward schemes should increase the variety of tangible benefits that customers may receive if they develop a long-term relationship with the network partners, therefore providing a further incentive for a loyal behaviour (e.g. O'Brien and Jones, 1995).

Networks of inter-firm ties, however, do not display homogeneously their effects across participants. Namely each firm in the CRM alliance network maintain a specific pattern of collaborative ties with other firms, therefore appearing on the marketplace as a distinctive combination of valuable opportunities for customers interested in developing a loyal behavior. The ability of each firm to deliver value to its loyal customers through joint CRM activities depends instead from the extent to which this firm is embedded in the network of alliances: on

one side, the position of this firm in the network influences its access to co-marketing opportunities, which effect can be labeled as structural embeddedness component, describing whom a firm is connected in the network. On the other side, the access to these opportunities depends on the characteristics of the collaborative relationships that a given firm maintains with its set of network partners, which effect can be labeled as relational embeddedness component, describing the strength of collaborative relationships with the network partners (e.g. Gulati, 1998).

Structural embeddedness and CRM effectiveness

From the previous literature review I have identified three main structural mechanisms which can explain how firm's position in an alliance network affects its outcomes.

A first explanation is based on the prominence argument. Prominence can be defined as the extent to which an actor is tied to many others in the structural system of relationships (Powell and Smith-Doerr, 1994). The prominence argument is based on a notion of volume of resources and opportunities accessed through the network (Koka and Prescott, 2002): the higher is the number of CRM alliances a firm develops, the higher should be the volume of opportunities of combining the customer relationship effort that can be accessed.

By acquiring a central position in a CRM alliance network, firm's value proposition to loyal customers becomes part of a wider bundle of products and services for which a relationship program is proposed, therefore making more attractive for the customer an engagement in a long-term repeated purchase behavior.

Specifically, by collaborating on promotions activities, a central firm is able to provide its customers with a wider set of opportunities of gaining advantages from being engaged in the relationship, therefore increasing their willingness to express a preference for the central firm during the time. Moreover, by collaborating on advertising with multiple partners, a central firm is able to enrich its communication for the most valuable customers more than a peripheral firm, increasing customers' perception of receiving a continuous preferential treatment, and therefore their willingness to maintain a long-term exclusive relationship. Finally, by allowing customers to gain benefits from aggregating their purchases for a wider set of other products and services, a central firm pushes its customers toward the redemption of higher tangible rewards, therefore increasing their willingness of maintaining a long-term repeated purchase behavior.

Therefore, I should expect that:

H1: The higher is prominence in a firm's network of CRM alliances, the higher is its effectiveness in managing customer relationships

The prominence argument is a straightforward approach to assess how networks impact on firm's economic behavior: embeddedness is conceptualized as the extent to which a firm is connected to the network, and the argument is based on the reasoning that the more relationships a firms maintain, the higher is the firm's access to resources and opportunities that can be translated into a valuable relational proposition to the customer.

However, such approach tends to undervalue the indirect effects of networks, which are embodied in the pattern of relationships of the actors to whom the central firm is tied. The structural holes approach (Burt, 1992; 1997) further explores this view, claiming that not all actors in a relational structure are equally useful connections: the outcomes of embeddedness depend instead on the variety (Koka and Prescott, 2002) and exclusivity of the relationships maintained with the network.

The structural holes argument is based on the notion of non-redundancy. Non-redundancy can be defined as the extent to which an actor occupies a position between actors otherwise disconnected (Rowley et al., 2000). Low levels of redundancy are an indicator of the presence of structural holes, while they also signal a low cohesion in the structure surrounding an observed actor.

In a CRM alliance network, firms maintaining non-redundant ties with other partners obtain two main types of benefits.

First, they access exclusive opportunities of developing the joint customer relationship effort, which are non-reproducible by other actors in the network, and therefore increase the attractiveness of a long-term purchasing relationship for customers. Namely firms maintaining non-redundant ties are able to develop distinctive bundles of products or services whose repeated purchase allow customers to gain rewards, since these firms are the unique path of connection between different customer relationship programs. They can offer joint sales promotion and reward options with their partners that competitors cannot propose, providing additional incentive to customers to maintain a preference for them against their competitors. Moreover, they can communicate to their loyal customers their exclusive connections with other partners, increasing customers' perception of receiving a preferential and exclusive treatment for being engaged in a loyal behavior.

Second, by providing a unique path of connection among actors, firms maintaining a high non-redundancy also benefit of a better control over their partners: namely a non-redundant actor is non substitutable in the network of alliances, and therefore its partners are more willing to collaborate and to fulfill its requirements. As a consequence, a firm spanning structural holes has a higher bargaining power in determining how the joint customer relationship effort is directed toward the customer base: for instance, joint sales promotion and rewards can be designed in such a way that customers perceive higher benefits in maintaining and concentrating their purchase behavior on the firm's value proposition; at the same time, advertising can be designed in order to enhance the communication of these benefits. In sum, the lack of redundancy in the CRM alliance network allows the firm to develop a customer relationship program which emphasizes the uniqueness of the relational benefits embodied in its value proposition towards the loyal customers, against possible competitors with less favorable positions in the network.

Therefore, I should expect that

H2a: The lower is redundancy of relationships in a firms' network of CRM alliances, the higher is its effectiveness in managing customer relationships

The structural holes theory, however, leaves one open question to be answered. While the firm spanning structural holes might be in the ideal position for accessing partners' customer-based resources, such as customer relationships, customer information and partners' skills in customer management, and controlling them, it is also in the worst position to provide its partners with incentives for sharing such resources. Namely, as far as the control over customer-based resources would be ceased to the *broker*, the partners would have any warranty of a collaborative behavior from the *broker*.

The opposite is true instead when the firm's network is rich in redundant ties, i.e. when closure exists in a firm's network (Coleman, 1988). When redundancy is high, network structures are poor in structural holes: the density of the network structure grows, and actors are increasingly interconnected, maintaining often relationships with the same subsets of partners. The resulting closure of the network structure has been proved to enable higher levels of trust, facilitating collaboration and the exchange of strategically relevant assets (Ahuja, 2000; Coleman, 1988; Podolny and Baron, 1997). Namely under closure conditions

actors have an incentive in avoiding *tertius* strategies of brokerage among actors, since also *tertius*'s partners maintain ties between themselves and can therefore control and punish an opportunistic behavior.

In CRM alliance networks, partnering firms will increasingly share customer-related information, which can be critical in order both to direct the relationship effort toward the most committed customers, and to adapt the effort according to the customer profiles (e.g. Day, 2003; Reinartz and Kumar, 2003; Winer, 2001). Furthermore, they will show a more intense sharing of their skills in delivering a preferential treatment for loyal customers, therefore improving their joint customer relationship effort. Higher levels of collaboration namely will increase the effectiveness of the co-marketing effort (e.g. Bucklin and Sengupta, 1993): bundles of products or services included in the relationship program will be selected more accurately; sales promotion will show a deeper research of synergies between products or services for which the repeated long-term purchasing behavior is promoted; joint advertising will show higher degrees of integration, therefore constituting a more consistent and integrated modality of communication toward selected customers; rewards schemes will be as well defined through more accurate combinations of incentives. In sum, the closure view of network structures sees in redundancy a slack of relationships that positively affect the joint development of customer relationship programs.

Therefore, there are also reasons to expect that

H2b: The higher is redundancy of relationships in a firm's network of CRM alliances, the higher is its effectiveness in managing customer relationships

Relational embeddedness and CRM effectiveness

Relational embeddedness refers to the characteristics of the relationships tying a given actor to the network, which can be conceptualized in terms of the strength of the relationships between a given actor and his partner – namely the tie-strength (e.g. Granovetter, 1973). For the purposes of this research, I define tie-strength among partners in an alliance through two constructs already developed in the literature: the frequency of interaction (Granovetter, 1973; McEvily and Zaheer, 1999), and the degree of reciprocity and closeness (Rindfleisch and Moorman, 2001). Moreover, since the level of analysis of this study is the firm level, while

tie-strength is typically considered at the individual level, I add a fourth construct for inter-organizational ties, which I label intensity of inter-organizational interaction. Such construct is defined in terms of the number of organizations' members in the dyad that systematically interact in the alliance activities: it explicitly models the extent to which both organizations' members are involved in the collaborative effort.

There are two alternative approaches to assess the effects of tie-strength in CRM alliance networks.

A first approach points on the benefits that strong collaborative relationships breed in terms of resources sharing. Empirical evidence shows that critical resources are unlikely to be shared through weak ties, since they require a high level of collaboration between partners. Strong ties are more conducive than weak ties for strategically relevant resources: in intra-organizational environments strong ties speed up project development when knowledge-transferability is low (Hansen, 1999); in interpersonal networks of consumers, when high-sensible information is needed for consumption decisions, strong ties are more often activated in inter-organizational environments strength-of-ties enhances the sharing of private information, either if it limits the acquisition of new information (Rindfleisch and Moorman, 2001). Instead, weak ties are resulted to be more conducive when publicly shareable resources are communicated (Uzzi, 1999).

The management of customer relationship efforts has been considered in literature as a strategic capability, which imply the development of uncommon customer knowledge management skills as well as integrative processes across the organization, in order to properly address customer's needs along the relationship lifecycle (e.g. Day, 2000b; 2003; Reinartz and Kumar, 2003). Effectiveness of collaborative ties, which join partners' customer relationship efforts, therefore, should be related to the extent to which partnering firms share these strategically relevant resources, more than to the mere combination of already existing customer relationship programs. Collaboration which leverage each firms' skills and knowledge about managing customers should (1) result in a stronger capability of identifying the most valuable customers for each partner and their pattern of buying and consuming behavior across partners' products or services offering; (2) leverage each partner's skills in addressing customers' needs, and in developing a preferential and customized treatment for loyal customers. Namely a higher sharing of customer management skills will improve each partner's ability to identify which product and services can be usefully bundled in the frequent

purchases program; similarly, partners can assess more precisely which combinations of promotions are more attractive for loyal customers, which advertising tools are more effective, which rewards are preferred and how they can be combined.

Given that customer management skills are strategically relevant for firm's competitiveness, they are unlikely to be shared with weakly tied partners, while they should be increasingly shared as far as the collaborative relationship becomes tight. Therefore, according to this perspective, there are reasons to expect that

H3a: The higher is tie-strength in a firm's network of CRM alliances, the higher is its effectiveness in managing customer relationships

However, an alternative perspective might be developed in assessing the consequences of strong ties. Namely, while strong ties provide a wider integration between each partners' customer management activities, they also bind each actor's behavior to that of its partner. According to the *strength-of-weak-ties* argument, strongly connected actors are likely to share overlapping resources and information, therefore gaining limited benefits from their set of relationships (Granovetter, 1973).

Firms maintaining strong ties in a CRM alliance network display higher degrees of customer information sharing, as well as a stronger coordination of their customer management skills, which results in a wider integration of their customer relationship management programs. The closer collaboration should lead these firms to develop similar incentives for the loyal customer base, providing promotional and rewarding schemes that focus on the same range of customers' needs, and advertising efforts similar in the content and in the target. Therefore, the resulting customer relationship effort is more likely to produce overlap between the benefits offered by each partner, limiting the potential of extending the set of benefits that customers receive for their loyal behavior, which is endogenous in the CRM alliance.

Instead, it is more likely that firms maintaining weak ties for the management of customer relationships are able to access opportunities independently developed by their partners, therefore adding variety to their value propositions for customers who get engaged in a long term relationships. In sum, weak ties are expected to be conducive of novelty in customer relationship management techniques, while strong ties should tend to produce redundant

customer relationship efforts, which add less value to customers who adopt a loyal behavior. Therefore, on average, I should expect that

H3b: The lower is tie-strength in a firm's network of CRM alliances, the higher is its effectiveness in managing customer relationships

3.3. Marketing complementarity and CRM effectiveness

Basing on the previously discussed literature on cooperative advertising, sales promotion, and loyalty management (O'Brien and Jones, 1995; Samu et al., 1999; Varadarajan, 1986), I conceptualize complementarity for the marketing purposes at the product/service level – which I label marketing complementarity – in terms of the extent to which the products or services of two or more partners can be usefully integrated in order to satisfying consumers' needs. In order to avoid inconsistency with previous research on complementarity in inter-firm ties, I broaden the domain of this concept by explicitly including two components: the first is the similarity in the customer base targeted by the partners' products/services offerings, which creates a basis for exploiting synergies through a joint marketing effort; the second is the diversity in the products or services attribute profiles, which creates externalities in customers' decisions of joining the buying and/or consumption processes of the complementary products or services.

Specifically, marketing complementarity between CRM alliance partners is defined in this study as the extent to which partners' products or services (1) target a customer base with a similar lifestyle and with similar purchasing and consumption processes for those products, and (2) display a low overlap in the profile of the attributes which are relevant in order to satisfy the needs of the shared customer base.

Marketing complementarity between partners of a CRM alliance network impacts on different activities that firms perform in order to maintain and enhance customers' behavioral loyalty.

First, the development of a bundled value proposition (Harlam et al., 1995): as much as complementarity increases, customers will perceive as increasingly useful to be engaged in a long-term repeated purchase behavior, which allow them to repeatedly benefit from externalities in buying products which are similar in the buying and/or consumption processes and different in their functionalities.

Second, developing promotions and reward schemes for complementary products increases the customers' loyal behavior because they account in the value proposition both for the cumulated effect of promotions and rewards and for the externality benefits of buying and consuming complementary products or services together (Varadarajan, 1986)

Third, the communication of a preferential treatment for loyal customers who show a repeated-purchasing behavior for partners' products or services enhance its effectiveness when complementary increases (Samu et al., 1999). Namely consumers who process the information perceive that maintaining a repeated-purchase behavior of complementary products or services allow them: (1) to gain benefits from complementarities during the purchase and consumption processes and (2) to receive a preferential treatment for repeating such processes in the long-run.

In sum, when partnering firms develop a customer relationship effort which promotes a repeated purchase behavior for complementary products or services, they increase effectiveness because allow loyal customers to repeatedly benefit from externalities in the purchasing and consumption process.

Moreover, when firms develop a network of multiple CRM alliances, externalities of complementary products or services further increases, since the combinations of relational benefits available for each customer grow exponentially with the number of partners.

Therefore, at the aggregate level of a firm's network of CRM alliances, I should expect that

H4: The higher is the marketing complementarity in a firm's network of CRM alliances, the higher is its effectiveness in managing customer relationships

3.4. Moderating effects for structural embeddedness

So far, I have addresses the issue of how structural embeddedness, relational embeddedness and complementarity affect firm's effectiveness in managing customer relationships by assuming the absence of interactions between these effects. However, there is a line of reasoning implicit in previous embeddedness study suggesting that this assumption might be inadequate, or at least needed of further exploration. If relationships characteristics –such as tie-strength– and actors' characteristics –such as complementarity – affect firm's ability to gain benefits from maintaining a network of alliances, two firms occupying the same position in networks with different tie-strengths and complementarities are not expected to be equally

effective: instead, the positional mechanism should be boosted for higher degrees of relational embeddedness and complementarity. I illustrate my argument first by discussing the moderating effect of relational embeddedness on the relationship between structural embeddedness and CRM effectiveness, and then the moderating effect of complementarity.

Interaction effects between tie-strength and redundancy, prominence

If firm's position in the network is a source of advantages regardless the relational characteristics of the structure, we should expect that neither relational embeddedness argument do hold. Namely consequences of embeddedness are explained by firm's position in the whole network of strong and weak ties, which are both relevant sources of influence through the network structure. Evidence for this argument has been provided in inter-firm network research settings, where tie-weakness, operationalized as infrequency of interaction, was proven to be unrelated to the acquisition of competitive capabilities (McEvily and Zaheer, 1999).

Instead, if the relational characteristics are a source of advantages regardless the characteristics of the network structure, we should expect that none of the structural embeddedness arguments hold. Namely network effects are determined by the quality of the relationship, while structural effects by themselves do not explain what actors are gaining advantages from embeddedness.

In fact, both arguments of strong and weak ties underlie interdependence between the relational characteristics and the structural characteristics of the network. Granovetter needs to assume that a forbidden triad exists when strong ties are linking actors, in order to argue that weak ties give access to non-overlapping informational resources (Granovetter, 1973). Krackhardt finds that similar positions in an inter-personal networks breed different outcomes according to the strength of ties in the network (Krackhardt, 1992).

The underlying issue is that ties are constitutive parts of the network, and therefore proposing that both tie characteristics and structure characteristics may affect the network, by assuming that they are unrelated, is theoretically incoherent. If the characteristics of each tie matter, the effectiveness of the structural embeddedness varies with tie characteristics, since structural effects are a combination of single-relational effects.

Previous researches on network contingencies have suggested that tie-strength and redundancy can be considered as potential substitutive mechanisms for resource transmission

(Rowley et al., 2000): namely, both redundancy and tie-strength are mechanisms enabling trust and cooperation among network members.

According to this view, networks where high redundancy is coupled with strong ties become less efficient in accessing non-overlapping resources, limiting the variety of opportunities that a firm accesses. Instead, networks where high non-redundancy is coupled with strong ties enable firms both to access new opportunities and brokerage power and to develop higher degrees of collaboration with trusting partners. However, the mechanism is not symmetric: when tie-strength is low, redundancy effects are not strengthened, since the weak ties are overlapping in their contacts and therefore cannot be a source of novel opportunities and resources (Granovetter, 1973).

Therefore, applying the argument in the research settings of CRM alliance networks, I should expect that

H5: When tie-strength in a firm's network of CRM alliances is high (low), the negative relationships between redundancy and firm's effectiveness in managing customer relationships is higher (lower)

The underlying rationale of this argument is that the advantages of accessing exclusive opportunities for delivering non-reproducible bundles of benefits for loyal customers, which derive from crossing structural holes in the structure of alliances, are enhanced when the bridges that span the holes – the collaborative relationships linking the firm to its partners – are stronger, because a strong tie increase collaboration and therefore the sharing of customer management skills and the coordination of the joint customer relationship effort.

If a substitution effect explains how non-redundancy and tie-strength interact, however, a similar perspective does not seem appropriate to investigate interdependencies between prominence and tie-strength. While previous researches provided empirical evidence in favor of an argument of positive interaction between tie-strength and prominence (e.g. Koka and Prescott, 2002), the competing argument of a negative interaction also can hold. Namely the prominence perspective makes an argument of volume of resources and opportunities accessed by the central actor in the network. If this volume is more valuable when weak ties are prevailing or when strong ties are prevailing seems to depend from what argument about relational embeddedness holds.

Therefore, following the previous discussion about the strength-of-weak-ties effects, I should expect that:

H6a: When tie-strength in a firm's network of CRM alliances is low (high), the positive relationships between prominence and firm's effectiveness in managing customer relationships is higher (lower)

The underlying rationale of this argument is that a prominent position in a CRM alliance network is enhanced when firms maintain a set of prevailing weak ties with their partners, which allow them to access novel skills and tools for managing customer relationships. Instead, being central in a set of relationship where strong ties prevail should be less effective, because skills and customer management tools among partners are overlapping and therefore have a lower potential of increasing the relational benefits for loyal customers.

However, following the previous discussion about strong ties effects, there are reasons also to expect that

H6b: When tie-strength in a firm's network of CRM alliances is high (low), the positive relationships between prominence and firm's effectiveness in managing customer relationships is higher (lower)

The underlying rationale of this argument is that a prominent position in a CRM alliance network is enhanced when firms maintain a set of prevailing strong ties with their partners, because these ties are more effective in enabling trust and cooperation. By developing trust with their partners, firms are more likely to access highly critical resources such as customer relationship management skills, therefore increasing their ability of delivering and effective CRM program through their effort.

Interaction effects between marketing complementarity and redundancy, prominence

According to the previous discussion, firm's position in a network of CRM alliances can be considered as a source of heterogeneity in the outcomes of collaborative relationships. For instance, firms occupying a prominent position in the network, as compared to firms occupying a peripheral position, are expected to access a higher volume of opportunities for

configuring their relationship marketing effort, therefore enhancing their ability in delivering preferential treatments for their loyal customers.

However, when considering the attributes profile, nodes in a networks cease to be equal sources of opportunities. Specifically, reaching high complementary partners should result in a value proposition where customers benefit from higher externalities in the purchase and consumption processes. Instead, reaching partners that deliver low-complementary products and services should result in a value proposition for loyal customers which tend to be the mere sum of each firms' value proposition. In other terms, it seems arguable that effectiveness of network positions increases when the nodes accessed through the network display a higher degree of compatibility with a given actor. A firm that has a strong position in the network but is connected to partners that sells low-complementary products or services gains lower benefits from collaborating with its network partners: namely their joint relationship marketing effort tend to display additive effects, while externalities for customers are low. Instead, if the firms that has a strong position in the network are also connected to actors with high levels of marketing complementarity, the cooperative web increases its effectiveness, because it shows a wider set of integration opportunities. Specifically, by leveraging on such externalities, the relationship marketing effort increases its effectiveness (1) in proposing bundles of products which encourage a repeated purchase behavior; (2) in communicating and rewarding the repeated purchasing behavior of these products and services, impacting on customers' loyal behavior.

Therefore, I should expect that marketing complementarity moderates the effects of prominence and non-redundancy as predicted by previously discussed structural embeddedness theories:

H7 (prominence argument): When marketing complementarity in a firm's network of CRM alliances is high (low), the positive relationships between prominence and firm's effectiveness in managing customer relationships is higher (lower)

The underlying rationale of this argument is that effectiveness in managing customer relationships which derives from joining a wider volume of CRM efforts is enhanced when

this volume of CRM activities focuses on stimulating the repeated purchase of products and services which, combined, increases the value for customers.

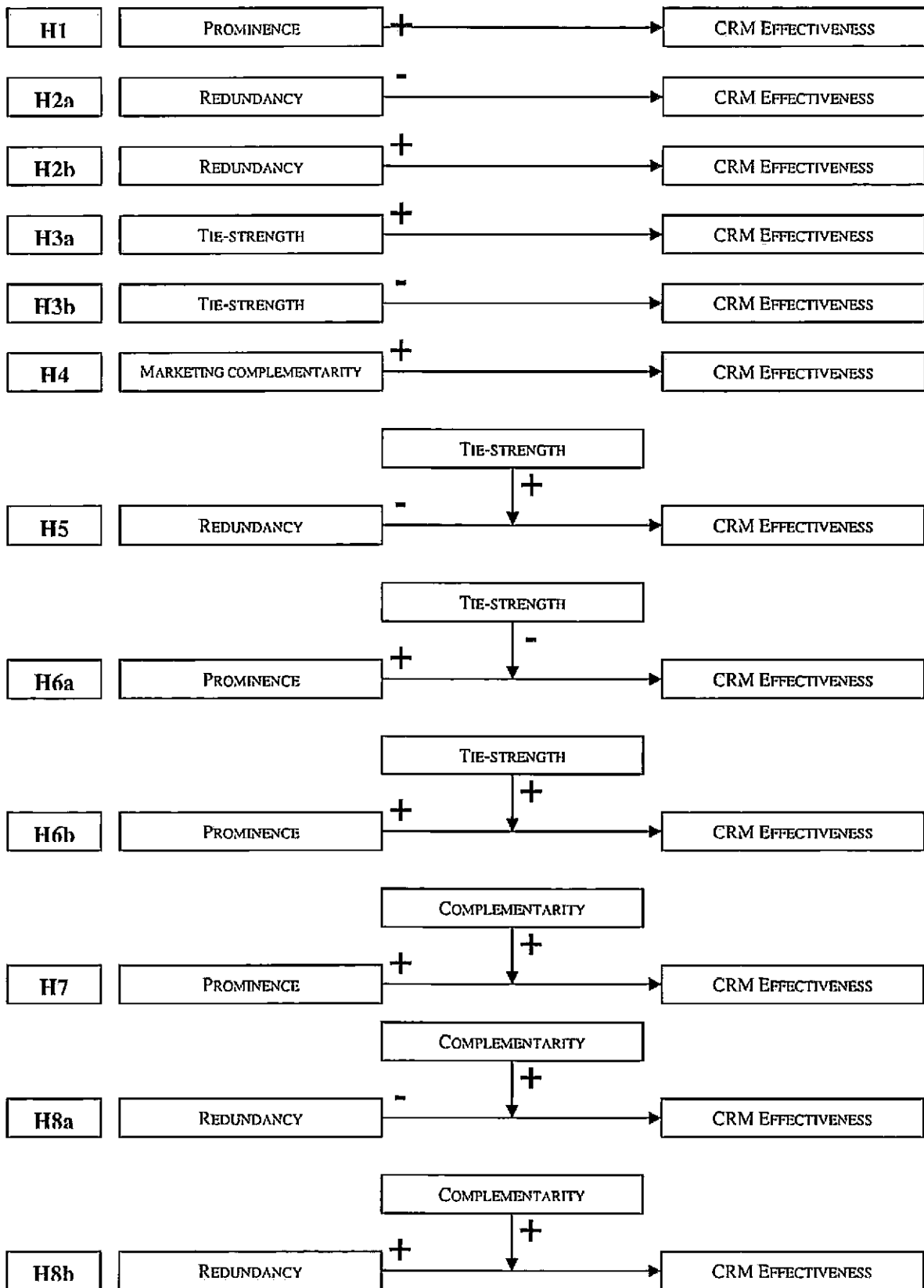
H8a (structural holes argument): When marketing complementarity in a firm's network of CRM alliances is high (low), the negative relationships between redundancy and firm's effectiveness in managing customer relationships is higher (lower)

The underlying rationale of this argument is that effectiveness in managing customer relationships which derives from delivering to loyal customers an exclusive bundle of relational benefits is enhanced when such bundle is more attractive because of the externalities among the underlying products and services.

H8b (closure argument): When marketing complementarity in a firm's network of CRM alliances is high (low), the positive relationships between redundancy and firm's effectiveness in managing customer relationships is higher (lower)

The underlying rationale of this argument is that effectiveness in managing customer relationships which derives from a tighter collaboration among partners of a joint customer relationship effort is enhanced when this effort is directed toward increasing the long-term repeated purchasing behavior of products and services that customers potentially would be willing to purchase together because of their externalities.

Figure 2 – Hypotheses



Chapter 4

Research implementation

In this chapter, I illustrate a first empirical design for testing the hypotheses of the theoretical model presented in Chapter 3. I explain the research strategy, describing how data have been collected and the characteristics of the firms included in this study and their alliances. Moreover, I point on the operationalization of constructs and on methods adopted for testing my hypotheses.

It must be highlighted, however, that data collection in this study led to a limited number of observations (n=22). As it will be explained in greater detail during this and the next chapters, the current data availability allowed only a partial test of the model, which excluded the hypotheses 1, 6a, 6b, 7 due to a multi-collinearity issue related to the prominence operational measures. A further data collection is therefore needed in order to increase the statistical validity of the model and to allow a full test of the theoretical framework.

4.1. Nature of the theory

The theory developed in this study is a variance theory, aimed at explaining the pattern of firm's outcomes – as expressed by their effectiveness in managing customer relationships – through variations of three characteristics in its network of cooperative alliances: the structural embeddedness, the relational embeddedness and the complementarity with network partners' products and services.

4.2. Unit and levels of analysis

The focus of this research is on the firm-level consequences of inter-firm collaborative ties for the management of customer relationships. Consequently the unit of analysis– i.e. the entity under study (Singleton and Straits, 1999) – is the firm. However, this study implies the collection of data at different levels of analysis, and therefore requires specifying carefully

how data collected at different levels can be referred to the unit of analysis, in order to avoid ecological fallacy effects (Robinson, 1950)¹⁹.

CRM effectiveness is a construct expressing the aggregated behavior of the customer base in terms of repeated purchases of the products and services of a given firm – which I label focal firm – as a response to the customer relationship effort developed by the focal firm and its partners. Such a construct is analyzed at the firm level, by aggregating the individual loyal behavior for the whole set of customers of the focal firm. In order to avoid ecological fallacy, I need to insulate the effect of the joint relationship effort on the focal firm's customer base purchasing behavior from its purchasing behavior toward the partners of the focal firm. Therefore, I consider for each focal firm only the repeated purchases pattern referred to its products and services.

Marketing complementarity in a firm's CRM alliance network is a construct focusing on the fit between the products and services of a focal firm's and those of its CRM alliances partners. Hence, marketing complementarity is first analyzed at the dyadic level, by focusing on each collaborative relationship between the focal firm and its partners; then, marketing complementarity is aggregated at the ego-network level²⁰, by imputing the ego-network marketing complementarity to the focal firm. Therefore marketing complementarity is analyzed for each ego-network with specific reference to the relationships of the unit of analysis.

Similarly, relational embeddedness is a construct expressing the strength of the relationships between the focal firm and its partners. Relational embeddedness is therefore analyzed at the dyadic level, by focusing on each collaborative relationship between the focal firm and its partners, and aggregated at the ego-network level, by imputing the whole ego-network tie-strength at the ego of the network, i.e. the focal firm. Therefore also the relational

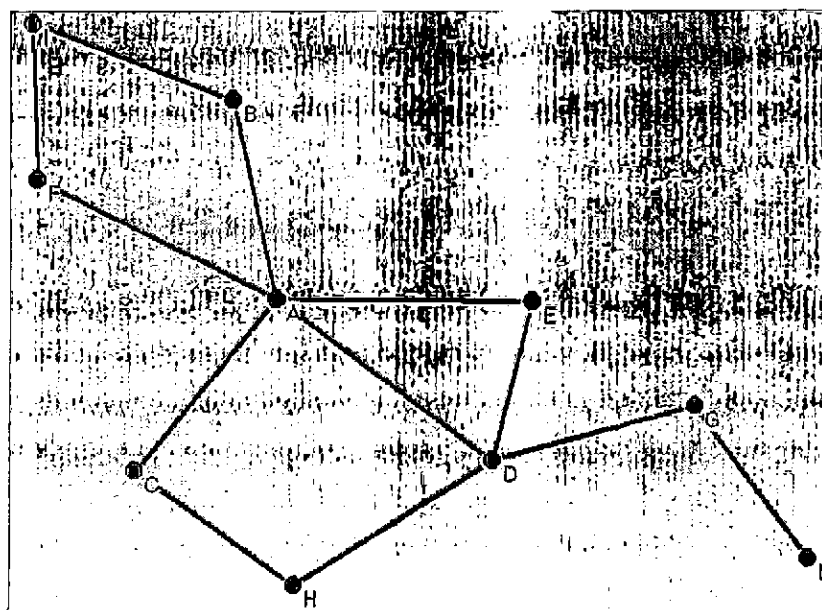
¹⁹ Ecological fallacy occurs when relationships between constructs at a given level of analysis are used to make inferences about constructs at a lower level of analysis: for instance, ecological fallacy exists when the researcher finds evidence about a relationship between properties of a group in a geographic area and uses this evidence to infer consequences for the behavior of individuals belonging to that geographic area (Singleton and Straits, 1999, p.69).

²⁰ The ego-network level, as operationalized in this study, includes the direct contacts of an actor with the network members, i.e. the set of partner's to which a given firm is allied in the CRM alliance network.

embeddedness is analyzed for each ego-network with specific reference to the relationships of the unit of analysis.

Finally, structural embeddedness points on the wider pattern of relationships where a focal firm is embedded in: structural effects include both direct ties of a focal firm and ties maintained by its partners (e.g. Burt, 1992; Coleman, 1988). Therefore, structural embeddedness is a construct analyzed at the ego-network level, where also indirect ties are considered. In this case, I focus on a group – the ego-network – as a level of analysis, in order to assess consequence for a single actor, the ego of the network. However, ecological fallacy is avoided because the ego-network pattern of relationships is constructed on the ego and therefore varies for different focal firms. An example is proposed in Figure 3, based on a set of 10 actors and 11 relationships. Structural embeddedness for the A's ego-network is assessed at the level of the network composed by B, C, D, E, F by considering also the ties maintained by these actors, i.e. the A, B, C, D, E, F, G, H, I network. However, structural embeddedness for D, which is part of the A's ego-network, is assessed at the level of the network composed by G, H, A, E, by considering also the ties maintained by these actors, i.e. the A, B, C, D, E, F, G, H, L network: in this case I is not included, whereas L is part of the D's ego-network. As it appears from this example, structural embeddedness in a focal firm ego-network varies with the focal firm and not with the group where the focal firm is embedded in. Therefore, ecological fallacy effects are avoided through this approach.

Figure 3 – Structural embeddedness at the ego-network level



From the previous discussion it follows also that the higher level of analysis in this study is the ego-network. A premise of this approach is that network ties act mainly at a local level, while the network as a whole is considered to have non significant effects on the actor's behavior. Such approach is consistent with an emerging view of network structures, which stresses the stickiness of network ties, suggesting that network effectiveness may derive more from the interaction of a small set of partners instead of depending from the whole integration of the network (Provan and Sebastian, 1998; Rowley et al., 2003).

4.3. Research design and limitations of the research strategy

The theoretical model hypothesizes a causal relationship between CRM effectiveness – the effect – and structural embeddedness, relational embeddedness, and complementarity – the causes.

To test this model I have built a quasi-experimental design²¹, and specifically a cross-sectional survey. The effectiveness of this research strategy in inferring a causal relationship between the independent variables and the dependent variable can be evaluated by reference to the two main alternative strategies which are adopted in management and marketing studies, i.e. the experimental design and the case study design (e.g. Singleton and Straits, 1999). Three criteria can be followed in order to evaluate the design, by focusing on: (1) the ability of the research design to assess a co-variation between the cause and the effect; (2) the ability of the research design to assess the non-spuriousness of the relationship, ensuring that alternative explanation for the causal relationships have been excluded, and (3) the ability of the research design to assess a temporal precedence of the cause on the effect (Cook and Campbell, 1979)²².

First, the ability to assess co-variation between the cause and the effect is high in a survey as well as in an experiment, as compared to a case study: namely both a survey and an experiment allow the random selection of cases and a replication logic which are needed in

²¹ A quasi-experimental design can be defined as an experiment that has "treatments, outcome measures, and experimental units, but do not use random assignment to create the comparison from which treatment-caused change is inferred" (Cook and Campbell, 1979, p.6).

²² According to Simon, "correlation is proof of causation in two variable case if assume time precedence and non-correlation of error terms" (Simon, 1957).

order to obtain statistical validity in the results, which is not ensured through a case study research design.

However, the ability to assess the non-spuriousness of the relationship is limited in a survey, because a survey analysis does not allow assigning treatments to the subject of study randomly. Such limitation exposes the results to a threat in terms of validity of the inferences, because the effect could be caused by other factors exogenous to the model which affect both the dependent and the independent variables. Spuriousness instead would be limited in an experimental design by the random assignment of treatments, which allows assuming that the experimental unit in the treatment and in the control group on average show non-systematic differences. In order to ensure consistency, I have included in the analysis a set of control variable for exogenous factors that – according to the existing literature – can affect the constructs of the model and their hypothesized relationships.

Third, the ability to assess a temporal precedence of the cause is low in a cross-sectional survey since cause and effect are both observed at the same time, without intervening on the cause. Instead, an experimental design would allow to directly manipulate the hypothesized cause and to observe possible consequent variations in the dependent variable. At the same time, other longitudinal design such as a longitudinal survey or a longitudinal case study would allow to observe the path of events during the time, therefore assessing more accurately the sequence between the cause and the effect.

Such limitation implies cautious considerations about the direction of causality. For instance, finding a strong relationship between embeddedness and CRM effectiveness could imply that firm's effectiveness in managing relationships with customers could be an antecedent of firm's embeddedness in the network. While acknowledging that further researches would be required to address this issue either if a significant relationships would be found between the independent and the dependent variables, this study intend to accomplish a first necessary step, that is to assess that firm's embeddedness and complementarity with partners are related to CRM effectiveness.

Overall, the quasi-experimental research design seems a reasonable strategy to address the research problem: while using a case-study research seems sub-optimal in that it would not allow to check for statistically significant relationships between variables, building an experiment to observe the consequences of embeddedness and complementarities of a firm's network for the effectiveness of the firm in managing customer relationships seems a hardly

feasible study to address this research problem. Namely, it implies to be able to manipulate firm's alliance strategies in the ego-network while simultaneously observing the aggregate behavior of each firm's customers. Such an experiment would have required a considerable investment of resources, which is beyond the scope of this study, and a deep involvement of the firms investigated during the study, which seems not reasonably attainable.

4.4. Research setting

In order to test the hypotheses outlined in the theoretical framework, I needed a setting where (1) CRM practices have reached a high level of diffusion, (2) variety of firm's embeddedness and complementarity in the CRM alliance networks are observable.

The research setting of the airline industry seemed the most appropriate field to drive this research. Namely the airline industry has been the pioneering business where a specific modality of CRM practices – the frequent buyer programs – has been applied starting from the 80's (Toh et al., 1993), reaching during the years a worldwide diffusion. It also seems an industry where CRM alliances are variously spread, ranging from bilateral relationships to multilateral alliances with different degree of intensity in the collaboration (Gudmundsson et al., 2002), which ensure variance in the embeddedness-related variables. Moreover, firms in the airline industry developed a wide range of collaborative relationships, ranging from other travel industries, such as hotels, car renting as well as sea transportation industries, to industries sometimes unrelated such as utilities or financial services (Official Frequent Flyer GuideBook, in press), which allows accounting for variety in the complementarity variable.

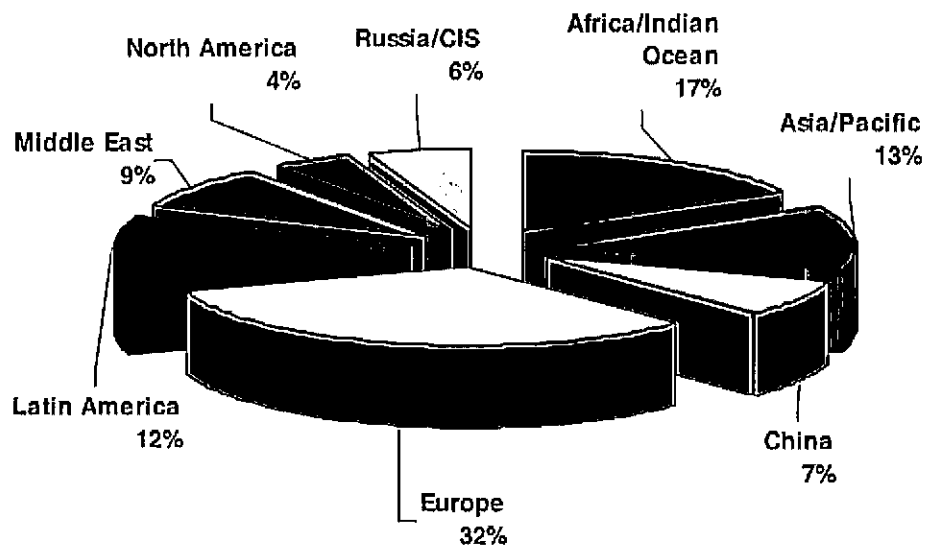
4.5. Population

CRM alliances in the airline industry typically involve partnerships with companies from multiple regional markets, which together constitute a worldwide network of partners²³. In order to capture the global feature of such collaborative ties for the management of customer relationships, therefore, I have focused on the population of the scheduled air transportation industry worldwide (corresponding to the SIC code 4512).

²³ Such cross-border feature of CRM alliances in the airline industry has been widely documented by the industry press (see for a reference the *Official Frequent Flyer Guidebook*, in press).

I have identified the population through the International Air Transport Association (IATA) database, which is publicly accessible through the IATA website²⁴. IATA, which has been founded in 1919, is the largest association of companies in the airline industry, whose members covers in 2003 about 95% of the worldwide scheduled air traffic. The association publishes online the list of the associated firms, along with their mailing address and website address. The database includes 278 firms, 247 of which are firms operating in the passengers scheduled air traffic, and 31 of which are firms operating in other air transportation businesses (such as mail transportation, goods transportation). Therefore I have focused on the population of the 247 companies associated to the IATA and operating in the passenger scheduled air traffic, which belong to 8 different geographic markets: North America (4%), Russia and C.I.S. (6%), Africa and Indian Ocean (17%), Asia and Pacific Ocean (13%), China (7%), Europe (32%), Latin America (12%) and Middle East (9%).

Figure 4 - IATA, regional distribution of the members



²⁴ www.iata.org

4.6. Data sources

To collect data I have drawn both from primary sources and secondary sources, accessed by combining the survey design with an integrative document analysis.

Survey data has been collected through a mailing questionnaire (appendix G) sent to the 247 IATA associated companies.

The questionnaire has allowed the collection of information about demographic, relational embeddedness (as related to frequency of interaction, degree of reciprocity and closeness, and intensity of inter-organizational interaction), marketing complementarity, and CRM effectiveness information. Moreover, information about the control variables, which I describe later in this section, has been collected through the mailing questionnaire.

Document data have been collected through primary and secondary sources in order to gather information about structural embeddedness. By analyzing each firm's frequent flyer program publicly available information on-line and whenever it is possible off-line, I have collected the data about each firm's partner, considering both firms in the airline industry and firms in other industries. To identify the ego-network relevant for assessing the structural effects, I have adopted a snowballing procedure in two steps: first, I have collected data about all the contacts of each actor – the ego – considered in the analysis; then, I have collected data about all the contacts of each contact of the ego. Therefore the resulting network structure relevant for this analysis has been the network of relationships where firms belonging to the airline industry *and* their partners were embedded. The choice of document data seemed appropriate to collect these data in that it has allowed the overcoming of one of the major limitations of survey on relational data, which is the reliability in identifying all the relationships where an actor is embedded in through a direct question to the respondent (e.g. Van de Ven et al., 1979).

4.7. Pretest of the survey instrument

In order to collect insights about the survey I have taken during the year 2003 three in-depth interviews – each one lasting approximately 3 hours – with marketing managers belonging to firms operating in the airline and in the travel-related industries in the Milano and Roma area, covering a wide range of issues considered in the final survey. I have used both the airline and other travel-related industries instead of using only the airline industry in order to further

improve the quality of the survey instrument, by extending its validity to a broader range of customer relationship management programs focused on frequent travelers.

Then in December 2003 the survey has been sent for a preliminary test to 15 Italian firms who already developed loyalty programs and co-marketing partnerships on their loyalty programs. As for the interviews, such companies have been selected according to the criteria that their main business was related to the travel business or because of the maintenance of partnerships with airline companies. The managers of these firms have been asked to fill in the questionnaire along with a comments sheet for feedbacks on the survey instrument (cover letter, instruction sheet and questionnaire), regarding its design, question wording and question order (Appendix I). Five filled questionnaire have been obtained, two from hotel companies, one from a credit card company, one from a car rental company, and one from a retailing company, for a response rate of 30%.

Moreover, I have discussed the survey instrument with several academics with a high expertise in the field to gather additional feedback for the survey instrument. The changes suggested during the pre-test regarded mainly to wording and formatting of the survey, while non substantial variations have been suggested. The final versions of the cover letter, instruction sheet, survey and instruction sheet are shown in Appendix B, C, and F. During the pre-test phase of the survey many of the interviewees were concerned about the confidentiality of requested data. Therefore, I have prepared and attached to the survey a detailed confidentiality statement (Appendix D).

4.8. Mailing process and response rates

The survey questionnaire was directed to the Marketing Director of the 247 firms belonging to the initial population. Since the IATA database does not provide executives names, a preliminary analysis of each company website has been performed in order to identify the Marketing Directors' names. When information about the Marketing Director's name was unavailable, the questionnaire has been sent to the Chief Executive Officer, asking him to fill in the survey or alternatively to identify the marketing director in charge of the supervision of the frequent flyer program.

Each informant has been mailed with an envelope containing a cover letter describing the research project, an instruction sheet, a questionnaire, a confidentiality statement and a self-addressed reply envelope. In the cover letter, the informants have been told that they would

have been provided with a customized summary report of the study result, as an incentive to participate. The mailing process has been organized basing on Dillman (1978), using a two-mailing round, sending a thanking letter to those who responded, and a reminding postage card to other firms (the remind letter is shown in the Appendix F). In the reminding post card I have specified that an online version of the survey questionnaire was also available on the web, in order to minimize the non-response rate due to misplaced surveys in the first mailing round. Finally, a second recall has been performed by email, sending a soft copy of the survey questionnaire along with the reminding letter directly to the marketing director or, when his/her email address was unknown, to the frequent flyer program email address, asking the webmaster to forward the request directly to the marketing director. In order to define the number of potential respondents and the response rate of the survey, I list in Table 5 the number of companies to which I have addressed the survey, and the reasons why many of them could not be considered as potential respondents.

Table 5 – Response pattern

Number of firms to which the survey was addressed	247
Firms excluded because they were subsidiaries of other companies (with a frequent buyer program, if existing, integrated in the program of the parent company)	7
Firms excluded because they declared they do not provide a frequent buyer program	5
Firms excluded because they were new companies	1
Number of potential respondents	234
Firms excluded because they explicitly refused to respond for internal confidentiality policies or lack of time	22
Firms excluded because they did not respond	187
Firms excluded because of a substantially incomplete survey	3
Firms included in the analysis	22

The final number of potential respondents, after having excluded those firms that were subsidiaries of other companies in the sample and those firms that answered to the survey declaring that they did not provide a loyalty scheme, was 234, while the final number of completed surveys useful for this study was 22, for a response rate of 9.4% (22 over 234). Given that a possible reason for the high non-response rate might be the absence of a loyalty scheme in the firm's offer, which would lower further number of potential respondents, I have

checked for the existence of a loyalty scheme in the surveyed firms websites, and I have found that 60 of these firms do not provide any evidence of the existence of a frequent buyer program on the web. Assuming that these companies do not provide a frequent buyer program at the moment of the analysis, the number of eligible firms for the analysis should have been considered equal to 174, for a response rate increasing to 14%.

In order to test for possible non-response bias, respondents and non-respondents have been compared on the basis of the relevant information contained in the IATA original dataset, essentially pertaining the country of incorporation. I have aggregated the 212 non-respondents and the 22 respondents in three groups corresponding to the geographic areas of North America-South America, Africa-Asia-Middle-East-Oceania, and Europe-Russia. I have then performed a chi-square test on the population divided between respondents and non-respondents. The chi-square test did not provide statistical differences between respondents and non-respondents.

4.9. Reliability

Data have been collected relying to a great extent on a self-reporting procedure based on a single respondent. As a consequence, eventual relationships among variables could be the effect of a common method variance, as suggested by Wagner and Crampton (1993). Therefore, I checked for the existence of common method variance by driving a Harman's one-factor test (Podsakoff and Organ, 1986). According to this procedure, common method variance exists when covariance in a set of items load on one factor. Driving an exploratory factor analysis on the set of 22 items constituting the independent and dependent variables, I found 7 factors with eigenvalues greater than 1, where the first factor accounted for 31% of the total variance, the second factor accounting for 18% and the third for 10%. Therefore, either if a common method source of variations is not fully absent from the relationships among variables, a substantial amount of variance (56%) is shared among factors other than the first component (from 2 to 7).

4.10. Measurement procedures

The theoretical framework focuses on four different theoretical constructs: CRM effectiveness, marketing complementarity, structural embeddedness, and relational

embeddedness. For each construct, I describe below the corresponding measures I have used in the empirical analysis. I draw from previous literature to identify already validated measures whenever it is possible, adapting them according to my research setting. I discuss then the operationalization process, and the control variable I have included in the analysis.

CRM effectiveness

As outlined in the literature review (§.2.1), there are multiple approaches in CRM research to conceptualize and operationalize CRM effectiveness. In this research, I have built on previous studies on behavioral loyalty, conceptualizing CRM effectiveness in terms of the behavioral response of the customer base to the CRM effort (De Wulf and Odekerken-Schroeder, 2003; Sharp and Sharp, 1997, Sirohi et al., 1998; Pritchard et al., 1999)²⁵. Such approach has been selected for two main reasons. First, because I was interested in the firm-level consequences of co-marketing alliances on CRM programs: approaches measuring effectiveness at the buyer-seller relationship level are therefore inappropriate since they focus on the relationship instead of the firm as the unit of the analysis. Second, because the behavioral response of the customer base captures more directly the effect induced by the CRM program than the economic outcome, where accurate estimations of the customer-level cost and revenue components are more difficult to be performed (§.2.1). The approach seems also consistent with most of the existing literature on the outcomes of CRM programs (Bolton et al., 2000; De Wulf and Odekerken-Schroeder, 2003; Magi, 2003; Pritchard et al., 1999; Reichheld and Teal, 1996; Sharp and Sharp, 1997; Sirohi et al., 1998; Verhoef, 2003).

It must be noted that, in this study, CRM effectiveness has been measured at the firm-level of analysis. Previous studies measured such effectiveness typically at the customer-level of analysis, through surveys (e.g. Flavian et al., 2001) or consumer panel research (e.g. Mason, 1991) conducted over a given firms' customer base. This procedure typically allows the gathering of fine-grained information about each customer's behavior in response to the firm's CRM program. However, it makes extremely difficult to compare data across firms and their CRM programs. Namely collecting data about each firm's customer is extremely expensive and requires the endorsement of each firm's, in order to get access to their

²⁵ In this study I have focused on a specific customer relationship effort (§.4), which is the frequent buyer program (or customer loyalty program), a "*structured marketing efforts which rewards, and therefore encourage, loyal behaviour*" (Sharp and Sharp, 1997, p.474).

customer databases. Moreover, such data should be then aggregated at the firm-level for the whole set of firms in the sample, which analysis implies considerable costs and time to be performed.

As a consequence, researchers typically have focused in their analyses on a single firm's customer base (e.g. Bolton et al., 2000), or in some cases on a limited number of firms grouped around a common customer base (e.g. Sharp and Sharp, 1997), while no extensive comparisons across different firms have been conducted so far.

In this study, however, I needed to compare CRM effectiveness across firms, in order to relate it to the firm's embeddedness in the network of CRM alliances and to the complementarity with other firms in the network. Therefore, I needed to rely on a measure for CRM effectiveness which does not require to collect detailed information at the consumer-level of analysis. For this reason, I have measured CRM effectiveness through synthetic measures at the aggregate level of the customer base, which can be collected by directly relying on the firm's management as informant. Specifically, I have collected data on two types of items: subjective indicators of effectiveness, as resulting from the management perceptions about their customer's behavior, and objective indicators of effectiveness, as resulting from synthetic indicators available in firm's customer databases. However while all respondents have provided data for computing the subjective measure of effectiveness (n=22), only 6 and 8 over 22 respondents have provided data also for the two items of the objective measure. Therefore, either if both measures are discussed in this section, they were dropped from the empirical model.

CRM effectiveness, subjective measure. As for the subjective measure, I have developed a six-items measure based on 7-point Likert scales, where four items aimed at capturing the intensity of the loyal behavior in the loyalty scheme customer base, and two items the duration of the loyal behavior in the loyalty scheme customer base. More specifically, the first item pointed on the frequency of purchases (Sharp and Sharp, 1997); the second item on the share of wallet (De Wulf and Odekerken-Schroeder, 2003; Magi, 2003); the third item assessed the usage level (Bolton et al., 2000); the fourth item focused on the price sensitivity (e.g. Reinartz and Kumar, 2002), expressing the willingness of loyal customers to pay a premium price for a given product/service; the fifth item pointed on the retention of customers over time (e.g. Reichheld and Teal, 1996), which expresses the share of customers who

remain the same in the customer base over the years; the sixth item referred to the customer lifetime (e.g. Reinartz and Kumar, 2002), which expresses the length of the period between the first and the last purchase made by the same customer. The subjective measure SEFF(i) for CRM effectiveness of the firm *i* has been defined as the average across the six items displayed in Table 6, according to the (1).

Table 6 – Items for a subjective measures of CRM effectiveness

Item and references in the literature	Code	Question	Scale	Ref. in the Survey
Frequency of purchases (Sharp and Sharp, 1997)	LBFOP	We have many cardholders who purchase our products/services with high frequency	7 points Likert-scale	D.1.
Share of wallet (De Wulf and Odekerken- Schroeder, 2003)	LBSOW	We have many cardholders who almost always prefer our products/services to those of our competitors	7 points Likert-scale	D.2.
Usage level (Bolton et al., 2000)	LBUSL	We have many cardholders who purchase high volumes of our products/services	7 points Likert-scale	D.3.
Price Sensitivity (e.g. Reinartz and Kumar, 2002)	LBPRS	We have many cardholders who purchase our most expensive products/services over time		D.4.
Customer lifetime (Reinartz and Kumar, 2000)	LBCLT	We have many cardholders who continue to regularly purchase our products/services over the time	7 points Likert-scale	D.5.
Customer retention (Reichheld and Teal, 1996)	LBCRT	We have many cardholders who remain in the customer loyalty program for many years	7 points Likert-scale	D.6.

$$(1) \quad SEFF(i) = (LBFOP+LBSOW+LBUSL+LBPRS+LBCLT+LBCRT)/6$$

The mean value of this measure was 5,40, with a standard deviation of 0,928. In order to assess the convergent validity of this measure, I have performed a Cronbach alpha test over the five items, which resulted in an alpha value of 0,90 (Table 7).

Table 7 – Descriptives and Cronbach alpha for the subjective measure of effectiveness (SEFF(i))

Indicators	Values
# of Observations	22
Mean	5,40
Std. Dev.	0,928
Min value	4
Max value	7
Cronbach Alpha	0,90

CRM effectiveness, objective measure. As for the objective measure, I have focused on aggregate data in order to avoid the necessity of asking firms specific information about individuals, which might be considered as confidential information that firms cannot diffuse. Specifically, CRM effectiveness has been measured through the following two items: the first has been the average frequency of purchases ($OEFF_1$) of the overall customer base of the loyalty scheme, expressed in per-week number of purchases according to the (2), where AFPU is the reciprocal of the average number of weeks passing between two subsequent purchases. The second has been the average customer lifetime ($OEFF_2$) of the loyalty scheme customer base, expressed in number of years according to the (3), where ACLT expresses the average number of years passed since the customer enrolled in the program. Both items have been averaged over three yearly data points corresponding to the period 2001-2003.

$$(2) \quad OEFF_1(i)_t = \frac{1}{3}(AFPU)_{t-2} + \frac{1}{3}(AFPU)_{t-1} + \frac{1}{3}(AFPU)_t.$$

$$(3) \quad OEFF_2(i)_t = \frac{1}{3}(ACLT)_{t-2} + \frac{1}{3}(ACLT)_{t-1} + \frac{1}{3}(ACLT)_t.$$

Table 8 - Items for objective measures of CRM effectiveness

Item Item and references in the literature	Code	Question	Scale	Ref. in the Survey
Frequency of purchases (Sharp and Sharp, 1997)	AFPU (reciprocal)	In 200x our cardholders purchased our products/services on average each (weeks):	Ratio Scale, 3 yearly data points	D.7.
Customer lifetime (Reinartz and Kumar, 2000)	ACLT	In 200x our cardholders were subscribing the customer loyalty program on average for: (years)	Ratio Scale, 3 yearly data points	D.8.

For the first item (frequency of purchases) I collected 8 observations, with a mean value of 0,24 per week purchases; for the second item (customer lifetime) I collected 6 observations, with a mean value of 3,61 years.

Table 9 – Descriptives for the objective measures of effectiveness (OEFF₁(i) and OEFF₂(i))

OEFF ₁ (i)		OEFF ₂ (i)	
Indicators	Values	Indicators	Values
# of Observations	8	# of Observations	6
Mean	0,24	Mean	3,61
Min value	0,04	Min value	2
Max value	0,5	Max value	6,33

Relational embeddedness

This theoretical construct refers to the strength of the relationships linking an actor to its partners in the network. Relational embeddedness has been operationalized in this study at the ego-network level through the construct of tie-strength intensity, using subjective measures, by asking the identified respondent of the focal firm in the ego-network to assess the strength of the relationships with each partner.

Such construct aimed at capturing the relational component of firm’s embeddedness avoiding at the same time an overlap with the structural component. As it has been noted (§.3), previous research on the effects of different embeddedness dimensions – namely structural and relational embeddedness - has focused on the relational component in ego-networks as a sum of tie-strength effects (Rowley et al., 2000). However, in this approach relational embeddedness varies also with the number of ties which show a given level of strength and not only with different levels of strength in the network. In this way, the tie-strength component of the relational embeddedness overlaps with the prominence component of structural embeddedness, which is based on the sum of ties maintained by a given actor.

In order to avoid this overlap, I have modeled firm’s relational embeddedness through the construct of tie-strength intensity in the ego-network, measuring the average tie-strength in the set of ties maintained by a local firm with its partners.

In this study, the strength of each tie has been measured using a 5-items measure accounting for: the degree of reciprocity and the degree of closeness (Moorman and Rindfleisch, 2001), the degree of interaction (Granovetter, 1973), as resulting from the frequency of interaction, accounting for the number of phone conversations during a given period (McEvily and Zaheer, 1999), and the depth of interaction, accounting for the number of individuals which are on average involved in the collaborative relationship. Such last item was inserted because of the characteristics of the network ties, which are co-marketing agreements, usually

considered in the literature as weak ties (e.g. Rowley et al., 2000). In fact, my preliminary interviews have suggested that CRM alliances might be strong or weak ties according to the extent to which teams are formed inside each partner firm in order to collaborate with partners. Namely CRM alliances tend to involve only one member per organization when the content of the relationship is limited to a commercial agreement, which is basically limited to the definition of a joint offer for a preferred treatment toward the customer base of the frequent buyers. Instead, when collaboration involve a deeper analysis of the customer base for the development of a specific joint relational effort, the number of organizations' members involved in the alliance increases, leading to the formation of organizational teams specifically focused on the joint customer management. Starting from these insights, I have proposed that a CRM alliance strength increases by the extent to which it involves larger numbers of individuals for each organization. During the pre-test phase, I have extensively discussed this indicator both with interviewees and with academics expert in the field.

The choice of a multi-index measure for tie-strength was motivated by the need to avoid criticisms emerged in previous literature, where it was highlighted that inferences about embeddedness effects can depend critically from the specific operationalization of the tie-strength construct (Krackhardt, 1992; Moorman and Rindfleisch, 2001).

Following the outlined approach, I have first measured the tie-strength at the ego-network level for each item according to the (4i-4v), by averaging the dyadic scores in the firm's ego-network. Then I have averaged the five items in the compound measure ENTSI(i) in (5).

Table 10 – Items for tie-strength intensity at the dyadic level

Item	Code	Question	Scale	Ref. in the Survey
Interaction – frequency	TSFOI	We have several phone conversation with this partner during the year	7 points Likert-scale	C.1.
Interaction – depth	TSDOI	We assign many people to the activities of collaboration with this partner	7 points Likert-scale	C.2.
Reciprocity	TSDOR	The relationship with this partner can be defined as “mutually gratifying”	7 points Likert-scale	C.3.
Closeness – social relations	TSDCA	We share close social relations with the members of this partner company	7 points Likert-scale	C.4.
Closeness – expectations of collaboration	TSDCB	We expect that we will be working with this partner far into the future	7 points Likert-scale	C.5.

$$(4i) \quad ENT\text{SFOI}_i = \frac{1}{k} \sum_k \text{TSFOI}_k(i)$$

$$(4ii) \quad ENT\text{SDOI}_i = \frac{1}{k} \sum_k \text{TSDOI}_k(i)$$

$$(4iii) \quad ENT\text{SDOR}_i = \frac{1}{k} \sum_k \text{TSDOR}_k(i)$$

$$(4iv) \quad ENT\text{SDCA}_i = \frac{1}{k} \sum_k \text{TSDCA}_k(i)$$

$$(4v) \quad ENT\text{SDCB}_i = \frac{1}{k} \sum_k \text{TSDCB}_k(i)$$

$$(5) \quad ENT\text{SI}_i = (\text{ENTSFOI}_i + \text{ENTSDOI}_i + \text{ENTSDOR}_i + \text{ENTSDCA}_i + \text{ENTSDCB}_i) / 5$$

The mean value of this measure was 5,22, with a standard deviation of 1,02. In order to assess the convergent validity of this measure, I performed a Cronbach alpha test over the five items, which resulted in an alpha value of 0,91 (Table 11)

Table 11 – Descriptives and Cronbach alpha for the subjective measure of tie-strength intensity in the ego-network (ENTSI(i))

Indicators	Values
# of Observations	21
Mean	5,22
Std. Dev.	1,02
Min value	3,22
Max value	6,80
Cronbach Alpha	0,91

Structural embeddedness

This theoretical construct refers to the structural characteristics of the network where actors are embedded in (Simesk et al., 2003), and points on the specific position of an actor in the network as a source of benefits (Gulati, 1998).

Structural measures have been calculated by constructing first a symmetric matrix (Scott, 1991), where rows and columns represented the nodes (firms) and the values in cells recorded the existence of a relationship (a co-marketing alliance) between the nodes (this archiving procedure for network data is exemplified in Table 12). Basing on document data collected through the companies' websites, I have adopted a snowball procedure in order to map the

relationships maintained by the ego' alters identified through the survey. Starting from the 169 partners of the 22 surveyed firms, I have identified 970 further nodes of the network, for a total of 2497 relationships. The 1161 nodes (22+169+970) constituted the rows/columns of the symmetric matrix, where the 2497 relationships have been inserted.

Table 12 – The symmetric matrix used to archive network data: an example

	Firm A	Firm B	Firm C	Firm D	Firm E
Firm A	x	1	0	1	1
Firm B	1	x	1	0	0
Firm C	0	1	x	0	0
Firm D	1	0	0	x	1
Firm E	1	0	0	1	x

Node of the network: firm E

Tie of the network: CRM alliance between firm E and firm D

Structural embeddedness has been operationalized through two main constructs, which were the construct of prominence and the construct of non-redundancy. Because of the focus of this research, which points on the local effects of network structures, I have considered prominence and non-redundancy at the ego-network level.

Prominence has been previously defined as the extent to which an actor is tied to many others in the network (§4.2): it means that “*the ties of the actor make the actor particularly visible to the other actors in the network*” (Wasserman and Faust, 1994).

Prominence has been measured through the index of actor's degree centrality (C_D)²⁶ (Freeman 1977,1979) as expressed in (6), where $n(i)$ indicates the node i in the network, and $x(i)_j$ indicates the tie between the node $n(i)$ and the node n_j .

$$(6) \quad C_D(i) = \sum_j x_{ji}$$

²⁶ Actor's degree centrality has been previously adopted as an indicator of prominence in a wide set of studies on social networks (Powell and Smith-Doerr, 1994), and it has been also adopted in inter-firm network studies to assess network effectiveness in terms of innovation (Powell et al., 1996).

The mean value of this measure was 21,952 with a standard deviation of 22,606.

Non-redundancy was previously defined as the extent to which an actor occupies a position between actors otherwise disconnected (Rowley et al., 2000) (§4.2). Redundancy has been measured at the ego-network level by adopting the index of local density (DEN_i), where low levels of density indicate high levels of non-redundancy and high levels of density indicate low levels of redundancy. Namely, local density assesses “the interconnectedness of relationships among a focal firm’s direct partners” (Rowley et al., 2000, p.378). Following recommendations of previous researches, I have excluded from the density computation the focal firm and its relationships (Rowley et al., 2000; Scott, 1991).

The ego-network density (DEN_i) has been therefore computed according to the (7), where $TIES(i)$ was the total number of ties in the ego-network, excluding the ties involving the ego, and $PAIRS(i)$ was the number of pairs of alters in the ego-network, i.e. the number of potential ties.

$$(7) \quad DEN_i = \frac{TIES(i)}{PAIRS(i)} \times 100$$

The mean value of this measure was 25,572 with a standard deviation of 24,730 (Table 13).

Table 13 – Descriptives for structural embeddedness measures

Cd(i)		DEN(i)	
Indicators	Values	Indicators	Values
# of Observations	21	# of Observations	21
Mean	21,952	Mean	25,572
Std. Dev.	22,206	Std. Dev.	24,730
Min value	1	Min value	0
Max value	86	Max value	100

Marketing complementarity

This theoretical construct refers to the potential of generating externalities by co-marketing two firms’ products/services toward a shared customer base (§.2.3, §.4.). In this study, marketing complementarity has been assessed through a composite measure based on five items. The first item was the similarity of partners’ customer base in terms of values and consumption habits, which emphasizes the strength of a joint marketing effort toward the customer who perceives that both partners’ products and services fit into his consumption

model (e.g. Prince and Davies, 2002). The second item was the similarity of partners' products/services purchasing processes, which highlights the potential for generating externalities for the customer who aggregates the purchases of both partners' products/services, therefore encouraging joint purchases of partners' products/services. Such type of complementarity has been previously labeled as distribution complementarity (Varadarajan, 1986). The third item was the similarity of partners' products/services consumption processes, which highlights the potential for generating externalities for the customer who purchases and consumes both partners' products/services jointly. Such type of complementarity has been previously labeled as use complementarity (Varadarajan, 1986). The fourth and fifth items pointed on the diversity of partners' products/services attribute profiles, which emphasize the potential for generating externalities by combining the consumption of products/services that cannot fully satisfy a given need alone. Such complementarity has been defined also in terms of product complementarity, which is determined by the extent to which one product is perceived as necessary for the performance or use of another product (Samu et al., 1999, p.59).

Marketing complementarity has been assessed in this study at the ego-network level, by averaging for each item the complementarity of each dyadic relationship maintained by the focal firm.

Following the outlined approach, I have first defined the complementarity at the ego-network level for each item according to the (8i-8v), by averaging the dyadic scores in the ego-network; then I have averaged the five items in the compound measure ENCO(i) in (9).

Table 14 – Items for a subjective measure of marketing complementarity in the ego-network (ENCO(i))

Item	Code	Question	Scale	Ref. in the Survey
Similarity – Customer base	DCCBC	Customers of this partner have lifestyles very similar to those of our customers	7-point Likert scale	C.6.
Similarity – Purchases	DCPST	Products/services of this partner and ours are purchased in very similar occasion	7-point Likert scale	C.7.
Similarity – Consumption	DCCNS	Products/services of this partner and ours are consumed in very similar occasion	7-point Likert scale	C.8.
Diversity – A	DCDVA	Products/services of this partner have functional characteristics which can very usefully integrate those of our products/services	7-point Likert scale	C.9.
Diversity – B	DCDVB	Products/services of this partner and ours fulfill customers' needs through different characteristics	7-point Likert scale	C.10.

$$(8i) \quad ENDCCBC_i = \frac{1}{k} \sum_k DCCBC_k(i)$$

$$(8ii) \quad ENDCPST_i = \frac{1}{k} \sum_k DCPST_k(i)$$

$$(8iii) \quad ENDCNS_i = \frac{1}{k} \sum_k DCCNS_k(i)$$

$$(8iv) \quad ENDCDVA_i = \frac{1}{k} \sum_k DCDVA_k(i)$$

$$(8v) \quad ENDCDVB_i = \frac{1}{k} \sum_k DCDVB_k(i)$$

$$(9) \quad ENCO(i) = (ENDCCBC_i + ENDCPST_i + ENDCNS_i + ENDCDVA_i + ENDCDVB_i) / 5$$

The mean value of this measure was 5,53, with a standard deviation of 0,74. In order to assess the convergent validity of this measure, I performed a Cronbach alpha test over the five items, which resulted in an alpha value of 0,95 (Table 15)²⁷.

Table 15 – Descriptives and Cronbach alpha for the subjective measure of marketing complementarity in the ego-network (ENCO(i))

Indicators	Values
# of Observations	21
Mean	5,53
Std. Dev.	0,74
Min value	4,11
Max value	7
Cronbach Alpha	0,95

²⁷ This measure assessed the complementarity at the ego-network level, by averaging the complementarity of each dyadic tie maintained by the focal firm. In order to check if the high level of reliability was an effect of the mean-convergence of each dyadic measurement, a further reliability analysis was conducted for the five items at the dyadic level (number of dyads in the sample =293), which resulted in a Cronbach alpha of 0,88.

Control Variables

As it has been previously discussed, the theoretical model I proposed makes inferences about firm's effectiveness in managing customer relationships through a set of independent variables aimed at capturing the influence of collaborative ties on the firm's customer management activity. However, there are sources of heterogeneity in CRM effectiveness which can influence also firm's embeddedness that have not been considered in the model, and which can be a source of spuriousness in the hypothesized relationships. I discuss briefly these effects explaining why I have included such variables as control in my analysis and how I have measured them.

Firm size. Larger firms may be in a better position to establish collaborative ties, because greater sizes can be associated with higher resource endowments, making firms more attractive as a network partner. At the same time, size can be also related to CRM effectiveness because of the double jeopardy effect, which predicts a positive relationship between the market share for a given product and the pattern of repeated purchases of the customer base (Dowling and Uncles, 1997; Ehrenberg and Uncles, 1996; Sharp and Sharp, 1997). Therefore, I have included the firm size as a control in my analysis, in order to check for possible relationships with both CRM effectiveness and embeddedness.

Firm size has been usually measured in terms of the total volume of sales or the total number of employees. While I collected data about both measures, I have entered into the model the latter (EMP_{*i*}) (10) because of the missing data referring to sales (15 data points for the sales volume; 22 for the number of employees).

The number of employee has been assessed on the basis of the firm's existing workforce at the end of the year preceding the analysis (2003).

Sales have been assessed through a three-yearly data points item averaging the firm's sales in the three years 2001-2003, according to the (11), where AASV_{*i*} identifies the average annual sales volume, *i* the observed firm, *t* the period.

(10) EMP_{*i*} = number of employees

$$(11) \quad AASV_i = \frac{S_i(t-1) + S_i(t-2) + S_i(t-3)}{3}$$

Cultural specificities. Cultural differences impact on actors' propensity to collaborate through network ties (Coleman, 1988), as well as on consumers' loyal behavior (Straughan and Albers-Miller, 2001). For instance, firms belonging to individualistic cultures such as in the western countries might show lower levels of embeddedness because of their lower propensity to collaborate. At the same time, firms operating in markets where individualistic cultures prevail might be less effective in managing customer relationships, because customers are less willing to invest in a long term relationship which might constrain their behavior.

In order to control for cultural differences I have adopted the geographic area of origin as a proxy of the cultural domain. However, I have focused on environments which were broader than the domestic boundaries because of the changing dynamics of cultural effects under the globalization pressures, which push cultures to cross domestic boundaries to be merged in a larger international context (e.g. Douglas and Craig, 1997). Therefore, I have identified 3 geographic areas further aggregating those defined by the IATA partition (North America, Russia and C.I.S., Africa and Indian Ocean, Asia and Pacific Ocean, China, Europe, Latin America and Middle East). Specifically, I have defined a first area for firms incorporated in the North and Latin America, a second area for firms incorporated in Europe, Russia and C.I.S., and a third area for firms incorporated in Africa, Indian Ocean, Middle East, Asia, Pacific Ocean and China. I have used two dummy variables AME and EAS, as expressed in (12a-b), for assessing firm's area of origin.

(12a) $AME = 1$ for North or Latin America; $=0$ otherwise

(12b) $EAS = 1$ for Africa and Indian Ocean, Asia and Pacific Ocean, China and Middle East; $=0$ otherwise

Each observation i has been coded with a value of 1 in the firm's geographic area of origin and 0 in the other dummy variable. Firms belonging to the European area have been coded with 0 in both dummy variables.

Table 16 – Items for control variables

Construct	Item	Code	Question	Scale	Ref. in the Survey
Firm Size	Average sales in the three year before the analysis	AASV	Company's annual sales (million of US\$)	Ratio scale, three data points	A.4.
Firm Size	Number of employees	EMP	Total number of employees of the Company at the end of the last year	Ratio scale	A.3.
Cultural specificities	Country of Incorporation	AME, EAS	Country of incorporation	Binary scale for each geographic region	A.2.

For the number of employees I have collected 22 observations, with a mean value of 10.196 and a standard deviation of 13.944. For the average sales item I have collected 15 observations, with a mean value of \$2,192 Mn. and a standard deviation of \$3,720 Mn.. For the country of incorporation items I have found 13 European firms, 6 Asiatic firms and 3 American firms.

4.11. Methods

In order to test the theoretical model I used a multiple regression analysis based on hierarchical moderators, imputing mean-centered data to minimize potential multi-collinearity between the main terms and the interaction terms (Cohen and Cohen, 1983)²⁸.

Multi-collinearity among the independent variables may hamper the interpretation of regression results, because regression coefficients of related variables confound each other's explanatory power. In order to assess the presence of multi-collinearity, I first checked the bivariate correlations among the variables entered into the regression, finding that all values were lower than the threshold value of 0,8 (Kennedy, 1998) except for the relationship between degree centrality and the number of employees, as well as the relationships between centrality degree and the interaction term centrality degree_x_ego network complementarity. I

²⁸ During the procedure, data have been also mean-weighted. Weighting each variable for its mean is a linear transformation that does not affect the regression results, while it allows a straightforward comparison across variables based on different scales.

therefore run the regression for the set of variables included in the model, checking for the tolerance value for multi-collinearity: all variables had a tolerance value greater than the limit of 0,1 (Neter et al., 1996), except for the centrality term and the interaction term centrality degree_x_ego network complementarity. I therefore dropped from the analysis the centrality degree terms as well as its interactions, and I runned a set of regression analyses of the remaining independent variables on the other independent variables, as suggested by Kennedy (1998). I finally found that the R^2 was in all cases lower than the R^2 of the model, which implies that no serious multi-collinearity issues remained in the final model.

This implied that hypotheses 1, 6a, 6b, 7 were not tested in this empirical analysis.

The model was then developed through a stepwise procedure, in order to monitor how the main effects changes when higher-order terms are introduced (e.g. Jap, 2001).

In step 1, the model was developed by entering into the equation the direct effects of structural embeddedness (P2a-2b), relational embeddedness (P3a-b), and marketing complementarity (P4) and as well as the control for firm size and cultural specificities (7a).

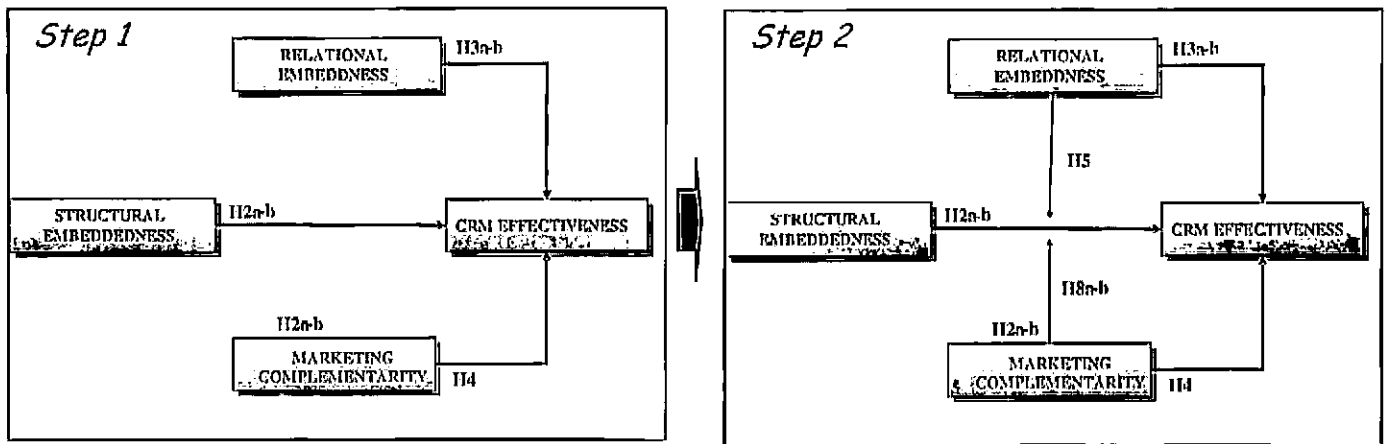
$$(7a) \quad EFF = \alpha_0 + \beta_1 DEN + \beta_2 ENTSI + \beta_3 ENCO + \beta_4 EMP + \beta_5 AME + \beta_6 EAS + \varepsilon$$

In step 2, the interaction effects between structural embeddedness, relational embeddedness and complementarity (P5, P8a-b) were added to the equation (7b).

$$(7d) \quad EFF = \alpha_0 + \beta_1 DEN + \beta_2 ENTSI + \beta_3 ENCO + \beta_4 EMP + \beta_5 AME + \beta_6 EAS + \beta_7 DEN \times ENTSI + \beta_8 DEN \times ENCO + \varepsilon$$

The stepwise procedure is outlined in Figure 5.

Figure 5 – Stepwise procedure for hierarchical moderator regression



Chapter 5

Results

In this chapter, I describe the outcomes of the statistical analysis of the research hypotheses, by analyzing the bi-variate correlations and the outcomes of the regression. As it has been outlined in the previous chapter, results should be considered preliminary because of the small sample which was available after the data collection ($n=22$). A further validation of the hypotheses will be therefore necessary in order to fully assess the statistical validity of the results hereby presented.

5.1. Descriptive statistics and correlation analysis

The correlation analysis showed in Table 17 led to the following results.

First, as regards to the hypothesized relationship between subjective effectiveness and degree centrality, I found a positive but non-significant relationship. Similarly, as regards to the relationship between subjective effectiveness and density, I found a positive but non-significant relationship.

The tie-strength intensity did not appear to be correlated to CRM effectiveness, while I indeed found as hypothesized a positive and significant relationship between marketing complementarity and subjective effectiveness ($r=0,587$; $p=0,005$). Also, the hypothesized interaction effects of degree centrality and density with tie-strength intensity and marketing complementarity in the ego-network showed low significance in their positive correlation with subjective effectiveness.

As for the control variables, I didn't find any significant correlation with subjective effectiveness. Such results included a non-significant relationship between the average sales volume, which however was not included in the further regression analysis because of the limited number of observations ($n=15$), and subjective effectiveness. At the same time, there was a positive and significant relationship between the average sales volume and the number of employees ($r=0,867$); $p=0,001$), indicating that the number of employees and the average sales volume are in this sample convergent proxies for the firm size.

As for the relationships among independent variables, I found a positive and significant relationship between degree centrality and the number of employees (($r=0,696$);($p=0,001$)), as well as between the centrality degree and its interaction terms centrality degree_x_ego network tie strength intensity (($r=0,696$);($p=0,001$)) and centrality degree_x_ego network complementarity (($r=0,803$);($p=0,001$)). A positive and significant relationship was also found between the number of employees and the interaction terms centrality degree_x_ego network tie strength intensity (($r=0,646$);($p=0,001$)) and centrality degree_x_ego network complementarity (($r=0,737$);($p=0,001$))²⁹. Moreover, I found a positive and significant relationship between tie-strength intensity and ego-network complementarity (($r=0,700$);($p=0,001$)) and a positive and mildly significant relationship between the number of employees and the ego network complementarity (($r=0,448$);($p=0,04$)). Among these relationships, all had a correlation index lower than the threshold value of 0,8 which is established as the “rule of thumb” for detecting multi-collinearity (Kennedy, 1998), except for the two relationships between degree centrality and (1) the number of employees (2) the interaction term centrality degree_x_ego network complementarity. I therefore checked for the existence of multi-collinearity among these variables by running the regression of the whole model: the tolerance values were in all cases greater than 0,1 - which is the limit suggested by Neter and colleagues (1996) – except for the centrality degree term and for the interaction term centrality degree_x_ego network complementarity. As I explained at the beginning of this chapter, I further verified for the existence of multi-collinearity for this variable during the regression, which was confirmed both by the collinearity statistics (VIF index and tolerance limit) and by a set of regression analyses among independent variables. Therefore I finally dropped from the model the centrality degree terms as well as its interactions.

²⁹ All the relationships between the prominence and firm size measures were also confirmed by the second measure of firm size, the average sales volume.

Table 17 – Descriptives and correlations

	SEFF	ENTSI	ENCO	CD	DEN	EMP	AME	EAS	CD*ENCO	DEN*ENTSI	DEN*ENCO	OEFF1	OEFF2	AASV
SEFF	1,000	,094	,587**	,259	0,117	,180	,064	-,032	,166	0,128	0,218	0,015	-,241	0,006
ENTSI	,094	1,000	,700**	,134	-,058	,294	-,094	-,021	,110	0,274	0,034	-,282	-,460	0,155
ENCO	,587**	,700**	1,000	,373	-,269	,448*	-,008	,140	,195	-,014	0,358	-,010	-,720	0,217
CD	,259	,134	,373	1,000	-,419	,864**	,297	-,027	,803**	-,254	-,051	-,183	-,135	0,896**
DEN	0,117	-,058	-,269	-,419	1,000	-,355	0,170	-,023	-,0156	0,449*	-,478*	-,232	0,746	-,479
EMP	,180	,294	,448*	,864**	-,355	1,000	,291	-,099	,737**	-,118	-,030	-,397	-,040	0,867**
AME	,064	-,094	-,008	,297	0,170	,291	1,000	-,243	,200	-,045	0,088			0,485
EAS	-,032	-,021	,140	-,027	-,023	-,099	-,243	1,000	-,274	-,344	0,053	0,404	-,196	-,139
CD*ENTSI	,166	,110	,257	,696**	-,220	,646**	,271	,066	,782**	-,251	-,010	-,160	-,329	0,637*
CD*ENCO	,190	,216	,195	,803**	-,156	,737**	,200	-,274	1,000	-,055	-,268	-,415	,291	0,714**
DEN*ENTSI	,128	0,274	-,014	-,254	0,449*	-,118	-,045	-,344	-,035	1,000	-,083	-,852*	0,922*	-,252
DEN*ENCO	,218	0,034	0,358	-,051	-,478*	-,030	0,088	0,053	-,010	-,083	1,000	0,400	-,893*	-,586**
OEFF1	0,015	-,282	-,101	-,183	-,232	-,397		0,404	-,160	-,852*	0,400	1,000	-,604	-,546
OEFF2	-,241	-,460	-,720	-,135	0,746	-,040		-,196	,291	0,922*	-,893*	-,604	1,000	0,700
AASV	0,006	0,155	0,217	0,896**	-,479	0,867**	0,485	-,139	0,714**	-,252	-,586*	-,546	0,700	1,000
N	22	21	21	21	21	22	22	22	21	21	21	8	6	15
Minimum	-,261	-,353	-,221	-,952	-,1	-,967	0,000	0,000	-,348	-,302	-,514	-,735	-,446	-,997
Maximum	0,294	0,366	0,327	3,104	3	4,394	1,000	1,000	0,609	0,262	0,132	2,536	0,754	5,733
Mean	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Std. Dev.	0,172	0,205	0,141	1,079	0,917	1,368	0,351	0,456	0,202	0,126	0,127	1,067	0,423	1,914

** Correlation significant at the 0.01 level (2-tailed).

* Correlation significant at the 0.05 level (2-tailed).

5.2.Direct effects on CRM effectiveness

In the baseline model, hypotheses H2a-b, H3a-b, and H4 referred to the direct impact of structural embeddedness, relational embeddedness and complementarity on the effectiveness of CRM. In general, the explanatory power of this model was relatively high, since more than 60% of variance was explained by the independent and control variables with an overall $p < 0,01$.

Table 18 – Model 1 summary of regression results

Variables entered	DEN, ENTSI, ENCO, EMP, AME, EAS
Dependent variable	SEFF
R square	0,721
Adjusted R square	0,601
F	6,031
p-value	0,003

More specifically, the test for the structural embeddedness effect (hypotheses H2a-b) led to a support for the closure argument, since the regression coefficient for redundancy resulted positive and significant ($(\beta_1=0,458)$; $(p \leq 0,05)$): hypothesis H2a was therefore not supported while hypothesis H2b was supported. Such result showed that, contrary to the structural holes hypothesis, firms with more dense network of partners obtained higher levels of CRM effectiveness.

Secondly, the test for the competing hypotheses of relational embeddedness led to a support for the strength-of-weak ties argument, since the regression coefficient for ego-network tie-strength resulted negative and significant ($(\beta_2=-0,630)$; $(p \leq 0,01)$): hypothesis H3a was therefore not supported while hypothesis H3b was supported. Thus, while a social control mechanism operated in the ego-network of the sampled firms, bi-lateral strong ties based on deep collaboration seemed ineffective in producing positive CRM outcomes. Instead, weak co-marketing relationships allowing to maximize the novelty of customer information and the variety of accessed customer bases seemed more effective for the success of CRM programs.

Thirdly, the test for the complementarity effect resulted in a positive outcome, since the regression coefficient for ego-network complementarity was positive and highly significant ($(\beta_3=1,24)$; $(p \leq 0,001)$): thus, hypothesis H4 was supported. This means that firms with higher

levels of overlap between customer bases and with highly compatible products/services earned higher performances from bundling their own offers into an integrated CRM effort.

Fourthly, as regards to the control variables, neither the cultural differences for geographic areas nor the firm size as defined by the number of employees resulted in any significant impact on the effectiveness of the CRM program.

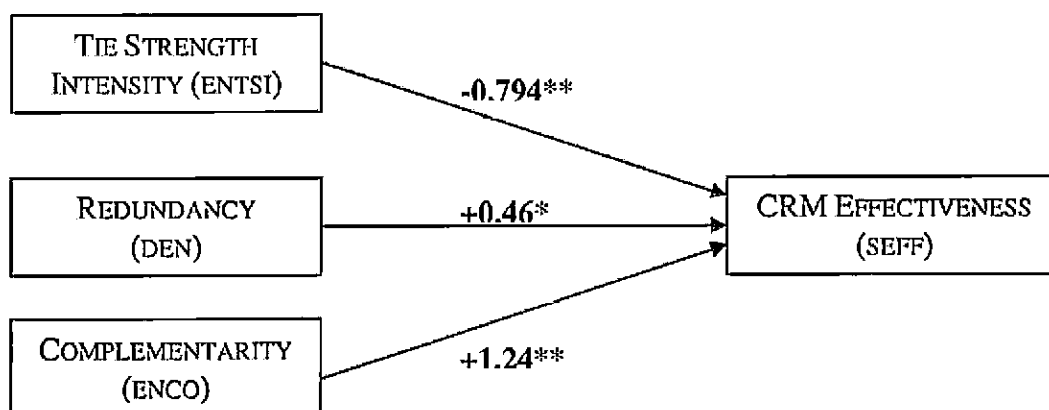
In Table 19 the un-standardized and standardized coefficients for the three variables and the controls, along with the t statistics, the p-values and the collinearity statistics, which were all under the threshold values (tolerance coefficient >0,10 and VIF<10) (Kennedy, 1983; Neter et al., 1990).

Table 19 – Model 1 regression results: β coefficients and collinearity statistics (dependent variable: SEFF)

	Unstand. Coeff.		Stand. Coeff. Beta	T	p-value	Collinearity Statistics	
	B	Std. Error				Tolerance	VIF
(Constant)	-4,319E-02	,0311		-1,402	,183		
ENTSI	-,630	,167	-,794	-3,784	,002	,453	2,209
ENCO	1,426	,260	1,240	5,482	,000	,390	2,566
DEN	8,122E-02	,029	,458	2,798	,014	,742	1,347
EMP	1,304E-02	,021	,111	,619	,546	,617	1,621
AME	-5,100E-02	,074	-,113	-,690	,502	,749	1,336
EAS	-6,115E-02	,054	-,174	-1,141	,273	,854	1,171

In Figure 6 I show the model emerging from the regression results.

Figure 6 – The model emerging from the regression results



**significant at 0,01 level; *significant at 0,05 level

5.3. Moderating effects on the embeddedness-CRM effectiveness relationship

In the full model, I added the interaction terms density_x_tie-strength intensity and density_x_complementarity to the previous equation, in order to test the hypotheses H5 and H8a-b referred to the interaction between structural embeddedness and relational embeddedness as well as complementarity.

Overall, the new model didn't show any improvement in terms of explanatory power. While the simple R square increased only for 2%, the adjusted R square was lower than in the model without interaction terms (-3%). Moreover, the p-value of the whole regression increased from 0,003 to 0,012.

Table 20 – Comparison between model 1 and model 2 regression results

Variables entered	DEN, ENTSI, ENCO, EMP, AME, EAS	Variables entered	DEN, ENTSI, ENCO, EMP, AME, EAS, DEN*ENTSI, DEN*ENCO
Dependent variable	SEFF	Dependent variable	SEFF
R square	0,721	R square	0,741
Adjusted R square	0,601	Adjusted R square	0,568
F	6,031	F	4,284
p-value	0,003	p-value	0,012

Namely, the hypothesis 5 related to a joint effect of tie-strength intensity and density on CRM effectiveness was not supported, since the coefficient for this interaction term was not significant ($(\beta_7=0,179)$; $(p \geq 0,1)$). This absence of evidence in favor of an interaction between structural embeddedness and relational embeddedness suggests that in co-marketing networks there is no remarkable trade-off between structural and dyadic mechanisms enabling customer resources access: the modalities of the tie and the configuration of the alters' relationships in the ego-network act instead as independent devices in facilitating the firm's access to customers and related information.

Similarly, the competing hypotheses 8a and 8b related to the joint effect of complementarity and density on CRM effectiveness were not supported, since the coefficient for this interaction term was not significant ($(\beta_8=0,020)$; $(p \geq 0,1)$). As a consequence, such results highlighted that redundancy acts as an mechanism of social control whose effectiveness does not depend from the characteristics of the resources that are shared through the network.

In Table 21 the un-standardized and standardized coefficients for the full model variables are displayed, along with the t statistics, the p-values and the collinearity statistics, which were all under the threshold values.

Table 21 – Model 2 regression results: β coefficients and collinearity statistics (dependent variable: SEFF)

	Unstand. Coeff.		Stand. Coeff.	T	p-value	Collinearity Statistics	
	B	Std. Error				Beta	Tolerance
(Constant)	-0,046	0,035		-1,324	0,210		
ENTSI	-0,671	0,192	-0,845	-3,495	0,004	0,369	2,707
ENCO	1,423	0,321	1,237	4,436	0,001	0,278	3,595
DEN	0,068	0,045	0,385	1,514	0,156	0,334	2,996
EMP	0,015	0,026	0,124	0,558	0,587	0,438	2,285
AME	-0,039	0,087	-0,085	-0,442	0,667	0,581	1,720
EAS	-0,038	0,062	-0,108	-0,612	0,552	0,701	1,427
DEN*ENTSI	0,231	0,270	0,179	0,853	0,410	0,491	2,037
DEN*ENCO	0,026	0,292	0,020	0,088	0,931	0,411	2,430

In Table 22, a summary of the results of the hypotheses testing is displayed.

Table 22 – Summary of hypotheses testing results

H1	The higher is prominence in a firm's network of CRM alliances, the higher is its effectiveness in managing customer relationships	NOT TESTED
H2a	The lower is redundancy of relationships in a firms' network of CRM alliances, the higher is its effectiveness in managing customer relationships	NOT SUPPORTED
H2b	The higher is redundancy of relationships in a firm's network of CRM alliances, the higher is its effectiveness in managing customer relationships	<u>SUPPORTED</u>
H3a	The higher is tie-strength in a firm's network of CRM alliances, the higher is its effectiveness in managing customer relationships	NOT SUPPORTED
H3b	The lower is tie-strength in a firm's network of CRM alliances, the higher is its effectiveness in managing customer relationships	<u>SUPPORTED</u>
H4	The higher is the marketing complementarity in a firm's network of CRM alliances, the higher is its effectiveness in managing customer relationships	<u>SUPPORTED</u>
H5	When tie-strength in a firm's network of CRM alliances is high (low), the negative relationships between redundancy and firm's effectiveness in managing customer relationships is higher (lower)	NOT SUPPORTED
H6a	When tie-strength in a firm's network of CRM alliances is low (high), the positive relationships between prominence and firm's effectiveness in managing customer relationships is higher (lower)	NOT TESTED
H6b	When tie-strength in a firm's network of CRM alliances is high (low), the positive relationships between prominence and firm's effectiveness in managing customer relationships is higher (lower)	NOT TESTED
H7	When marketing complementarity in a firm's network of CRM alliances is high (low), the positive relationships between prominence and firm's effectiveness in managing customer relationships is higher (lower)	NOT TESTED
H8a	When marketing complementarity in a firm's network of CRM alliances is high (low), the negative relationships between redundancy and firm's effectiveness in managing customer relationships is higher (lower)	NOT SUPPORTED
H8b	When marketing complementarity in a firm's network of CRM alliances is high (low), the positive relationships between redundancy and firm's effectiveness in managing customer relationships is higher	NOT SUPPORTED

Chapter 6

Discussion

In this study, I aimed at investigating the antecedents of the firm's effectiveness in managing relationships with its customers from a perspective external to the customer-company relationship, which informed most of previous researches on the relationship marketing approach and its application to CRM tools (e.g Morgan and Hunt, 1994; De Wulf and Odekerken-Schoreder, 2003).

In this way, I intended to challenge the assumption that effectiveness in managing customer relationships comes from the firm's ability to garrison the customer relationships, isolating the customer base from other suppliers (e.g. Dowling, 2002, Reichheld, 2003).

Instead, I argued that a given firm can enjoy significant benefits from developing web of alliances for sharing and co-developing the CRM effort with other suppliers, and that such networking approach is more effective when it involves partners whose products and services are targeted to similar customers, that they satisfy through non-overlapping attributes.

Following this line of reasoning, I proposed that the inter-organizational network of co-marketing alliances and the complementarity within the network affect the firm's effectiveness in managing customer relationship.

The findings of this study should be considered preliminary because of the small number of observations (n=22), which led only to a partial support for the modeled relationships among variables. More specifically, such limited number of observations resulted in some divergences between the simple correlation results and the regression results. Namely while the regression provided support for the hypotheses H2b, H3b and H4, the simple correlation resulted in a significant correlation only for the variables of the hypothesis H4, which was related to the marketing complementarity effect. Therefore, the discussion I develop with reference to the structural and relational embeddedness direct effects on CRM effectiveness is based only on the support for hypotheses H2b and H3b provided by the regression analysis.

Basing on this premise, I found that the regression output supported both the embeddedness and the complementarity views of CRM alliance networks. More specifically, I found that the cohesiveness of the network structure enhanced the CRM effectiveness, and thus I provided

support for an extension of the closure argument (Coleman, 1988) to marketing networks focused on CRM. Secondly, I found that the strength of the network ties negatively affected the CRM effectiveness, providing further support for the strength-of-weak ties argument (Granovetter, 1973) in marketing network focused on CRM. Thirdly, I broadened the concept of complementarity in co-marketing relationships by including previous conceptualizations (Prince and Davies, 2002; Samu et al., 1999; Varadarajan, 1986) in a new multi-item scale, and I found that the partner's potential for bundling their offerings, by leveraging on the compatibility of the products/service characteristics as well as the underlying similarity in the targeted customer base, is a significant antecedent of CRM effectiveness.

However, whereas I found that the network structure characteristics matters for CRM outcomes, I didn't find any significant interaction effects between the structure and the relational and complementary features of cooperation.

In the following pages I further detail these considerations, by providing my interpretation of the findings presented in Chapter 5.

6.1. Structural antecedents of CRM effectiveness

The finding that a relationship exists between redundancy in a firm's ego-network and CRM effectiveness indicates that firm level outcomes in CRM are not simply linked to the direct ties a firm maintains with other partners: instead, they depend on the structural characteristics of the larger network region where the firm's partners are embedded.

This study found only partial evidence in favor of the closure hypothesis, given that the bivariate correlations didn't confirm the significance of the relationship. However, such results seem important because they show that the firm's success in managing customer relationships does not depend entirely from the customer management activities it individually develops in autonomy or through the direct linkages of its CRM alliances: instead, a portion of its success is a function of the social context where its action takes place (Salancik, 1995).

More specifically, a focal firm enjoys greater benefits in terms of CRM outcomes when its partners are rich in linkages among themselves than when they are poorly connected. In terms of embeddedness, such results posit that a *tertius* strategy (Burt, 1992) is sub-optimal in a CRM alliance network. A *tertius* strategy points on the advantages that a given firm gains from being a non-substitutable link for its partners, i.e. the unique intermediate connection between partners otherwise disconnected. Such partners, which do not maintain direct

relationships, access each other through the *tertius*, who is in a privileged position to control the resources flowing through the network. Such brokering strategy, however, does not allow the development of social control mechanisms and therefore does not provide partners with strong incentives for sharing highly critical resources such as customer relationships. In the research settings of CRM alliances, namely, the *tertius* strategy results to be ineffective. Instead, firms embedded in networks rich in redundant ties enjoy superior outcomes because the network environment produces higher incentives in sharing customer-based resources such as customer relationships, customer information, and customer management skills, which are needed in order to identify the most valuable customers and in order to provide them with a customized preferential treatment. The findings of this research provide therefore evidence in support of a network view of marketing outcomes (Achrol and Kotler, 1999), and more specifically in support of the *closure* argument of embeddedness (Coleman, 1988).

In this study, the presence of multi-collinearity between the firm size control variable (number of employees) and the prominence variable (degree centrality) did not allow to directly test in the full model the hypothesis related to the structural effect of prominence. However, either when I runned separate regressions were using alternatively the two variables as regressors of CRM effectiveness, none resulted in a significant effect. The existence of a positive relationship between prominence and size was not totally unexpected, since literature on prominence already provided multiple evidence that firm's size might be related to the number of collaborative ties maintained by a given firm. Perhaps more interesting is that in this setting – once the size control was removed – the absence of prominence effects, pertaining the direct ties maintained by a given firm in the ego-network, was coupled with the presence of a density effects, pertaining the indirect ties existing in a given firm's ego-network. Such results, albeit provisional and requiring further evidence, strengthen the view that what really matters in network relationships is not the access to partners' resources allowed by direct ties, but the social control mechanism allowed by the larger structure where actors are embedded in.

6.2. Relational antecedents of CRM effectiveness

In this study, I have operationalized the concept of relational embeddedness through an intensity measure based on the average tie-strength in the firm's ego-network. Namely, I wanted to avoid a limitation of previous studies on relational embeddedness in ego-networks

(Rowley et al., 2000), which focused on the number of strong ties and weak ties as an indicator of relational embeddedness, in fact measuring the firm's prominence in networks with different tie-strength (cfr. § 4.10 and 2.4). Such approach is consistent with that of McEvily and Zaheer (1997), who averaged for each firm's ego-network the frequency of interaction, but it has been extended in order to cover a wider range of measures for tie-strength already developed in the embeddedness literature for inter-organizational relationships, adapting them for this study (Moorman and Rindfleisch, 2001).

Interestingly, by insulating the relational embeddedness concept domain from the network size dimension, tie-strength results negatively associated with CRM effectiveness. However, given that such result was not confirmed by the simple correlation analysis, there is only partial evidence in favor of the strength-of-weak ties argument (Granovetter, 1973).

Such negative relationship can be explained by observing that strong forms of collaboration in CRM have a "dual" effect. On one side, they allow firms to deeply share and co-develop relevant resources such as customer relationships and related information, enhancing firm's ability to identify the most valuable customers to target, and to provide their customer with fine-tuned reward schemes for long-term repeated-buying behavior. On the other side, however, strong ties lead to a greater similarity in the CRM program, reducing the variety and therefore the value generation potential for the customer, which derives from the combination of each partner's CRM effort. In other terms, by increasing the integration between each partner's CRM activities, strong ties lead to an overlap between the CRM programs, which reduces the variety of loyalty-rewarding options available for the customer base. In the research setting of CRM alliance networks, firms with relationships weaker on average outperform those with stronger ties: the net effect of such duality results therefore in a negative impact of tie-strength on the firm level CRM outcomes.

6.3. Marketing complementarity antecedents of CRM effectiveness

In a CRM alliance network, the marketing complementarities between a focal firm and its partners result in a strong predictor of the firm's effectiveness in managing customer relationships. Such claim finds evidence both in the simple correlation analysis and in the regression analysis, highlighting that in an alliance network the CRM success does not depend only from how a firm is connected to its partners, i.e. from the relational and structural

characteristics of its network of relationships, but also from whom the firm is connected to, and more specifically from the fit with its partners' characteristics.

Such fit acts at the level of the underlying customer base' characteristics, as expressed by their lifestyle and consumption habits related to the partnering firm's offers. When customers perceive that they obtain additional benefits by aggregating the purchases of multiple products/services that are highly compatible with their consumption models, they have stronger incentives in remaining in the CRM program as well as in intensifying their purchasing behavior toward the partnering firms. Moreover, the fit acts also at the level of the purchasing and consumption processes related to the partnering firm's products and services. Namely the stronger is the overlap between these processes, the stronger are the externalities for customers who aggregate the purchasing and consumption processes, and therefore once more the stronger is the incentive in remaining in the CRM program as well as in intensifying the purchasing behavior toward the partnering firms. Finally, the fit acts also at the level of the partnering firm's products and services relevant attributes: as far as they complete each other's profile in satisfying customers' needs, they display externalities which act as a further incentive for the customers remaining in the program for an intensification of the purchasing behavior toward the partnering firms.

The complementarity in a firm's ego-network, therefore, generates a lock-in effect as well as a push effect on the focal firm's customer base. First, a firms that develops a CRM program which gives access to firms with high marketing complementarities provides a higher incentive for remaining in the relationships, increasing the opportunity cost of changing the supplier. Namely a customer who exits the relationship with the focal firm renounces also to the externalities that can be enjoyed by extending the purchasing behavior to the network partners. Second, the CMR program based on a highly complementary ego-network generates a push effect in terms of repeated-purchasing pattern, because of the multiplicative effect that externalities and rewards have on its purchasing and consumption behavior.

6.4. Interactions with structural embeddedness

Contrary to the predictions of the theoretical model, none significant interaction effect was found between structural embeddedness and the other antecedents of CRM effectiveness.

This finding can be interpreted by observing that the structure of cooperation acts in CRM alliance networks as a higher-order system. Namely structural embeddedness does not impact

through the firm's prominence in its direct ties, whereas affects the firm's effectiveness through the cohesiveness of the indirect ties maintained by its partners. Firms in highly-controlled social environments are in the ideal condition for sharing customers with their partners, and for developing collaborative activities for a more effective management of customer relationships. However, such effect is somehow disjoined from the firm's direct ties, which instead condition the firm's access to specific opportunities. Weak ties are more effective than strong ties in providing novelty of information and maximizing the variety of accessed opportunities. At the same time, direct ties with highly-complementary partners are more effective than those with low-complementary partners in that they expand the value creation potential for customers who get engaged in the CRM program. It turns that while complementarity and relational embeddedness act at the level of the relationships directly maintained by the focal firm, affecting the quality and quantity of resources accessed through the network, structural embeddedness act at the level of the social system which a firm is indirectly linked to. The structural mechanism operates therefore in the environment external to the immediate relationships, while the relational and complementarity mechanisms act in the environment internal to the immediate relationships. Under this view, the absence of interaction effects between these mechanisms appears clearer: while the closure of the network environment operates at a macro-level, contributing to create the social conditions that facilitates collaboration, the tie-strength intensity and the complementarities between partners operate at a micro-level, shaping the effectiveness of the specific cooperative tie. Such mechanisms are therefore independent, each one contributing autonomously to the generation of CRM success.

6.5. Limitations

In this study, the validation of the theoretical model was based on a first empirical analysis which presented some limitations that need to be considered while discussing the results.

First of all, the sample size of this study is very small ($n=22$). This implies that any consideration about the statistical validity of the relationships should be subjected to further empirical validations in order to fully assess the significance of the relationships between variables. However, such study still represents, to the best of my knowledge, the first essay to collect and to systematically compare data about different CRM programs based on frequent buyer schemes, as well as about co-marketing alliances on CRM programs. Therefore, it still

provides the most complete picture at the present available about the existing relationships between the effectiveness of a CRM program and its antecedents at the level of co-marketing alliances.

A second limitation which is the direct cause of the former is that the response rate for this study was relatively low (9,4%). This outcome breeds some concerns about the possible non-response bias. In this study, I was only able to perform a non-response bias check for a qualitative variable describing cultural differences. Further analysis in order to compare the sample and the population characteristics were not performed because the IATA database I accessed does not publish data about its affiliates other than the demographic information. A request for access to further company data was formalized to the IATA CEO at the end of the year preceding the analysis, but resulted in a negative outcome. However, the IATA database still remains one of the most complete sources for the identification of the industry airline population, since it covers about the 94% of the total worldwide scheduled passenger traffic. Moreover, alternative sources of data on the airline industry containing financial information are mainly limited to listed firms, which represents a minority in the industry population and a too small population to be feasible of a survey procedure (such as *Worldscope*, covering 58 companies or *Mergent*, covering 74 companies worldwide).

Therefore, concerns about non-respondent bias in this sampling procedure have not been completely ruled out. However, it should be also considered that the relevant population for this survey was represented by those firms within the industry that maintained a frequent buyer program. Once I checked through the companies' websites for the existence of a frequent buyer program, I found that in 60 cases there were no evidence of such a CRM tools in the web. If I subtract these firms from the number of potential respondents, I obtain a baseline population of 174 firms, for a response rates increasing to 14%, which reduces the non-respondent bias issue.

A third limitation of this study, which is a direct consequence of the limited number of observations, is that I found only partial convergence between the bi-variate correlation analysis and the regression analysis. Whereas both supported the complementarity hypothesis, the embeddedness hypotheses on tie-strength and redundancy received support only from the regression analysis, while the bi-variate correlation resulted non significant. Moreover, I encountered a multi-collinearity issue for the prominence and size terms, which led to the exclusion of the prominence variable from the analysis.

While it was not possible to strengthen further the support in favor of the tie-strength and redundancy hypotheses, however, concerns regarding the exclusion of the prominence variable from the model were partially ruled out by observing that when separated regression models were run, by including alternatively the size variable and the prominence variable, none of these variables nor their interaction terms resulted in significant effects on CRM effectiveness.

A fourth limitation of this study is related to the choice of collecting data mainly through the same primary source, which raises an issue of common method variance. Such choice was mainly motivated by the empirical observation that secondary sources for information about CRM programs are extremely scarce and with low reliability. The most popular source for information about frequent buyer programs in the airline industry is the online publisher WebFlyer, which provides data about 45 frequent buyer programs, along with a rating of their performance. However, I checked the data provided by this source finding that they were collected across inhomogeneous temporal frames, and moreover they formed strongly skewed distributions. After these preliminary data collections, the survey questionnaire seemed the most coherent procedure in order to get data about firm's CRM programs and the underlying partnerships. In order to verify the extent to which correlations among the independent and dependent variables were attributable to a common method variance bias, I performed an exploratory factor analysis on the whole set of variables, which showed that such bias, albeit existing, was under the threshold values established by the "rule of thumb".

Instead, the reliance on the companies' respondents implied that I needed to limit the analysis to the subjective measure of effectiveness, since the data points for the two objective measures were too low ($n=8$; $n=6$) to be inserted into the model. However, as I highlighted before, this study is almost the first that compare the performance of CRM programs based on repeated-purchases reward schemes, the exception being a comparative analysis based on 4 different companies in a retail setting (Sharp and Sharp, 1997). Therefore, while limited by the subjectivity of the performance indicator, it still provide a first needed evidence about the relationship between variations in CRM programs characteristics and their performance.

Finally, a further limitation is given by the cross-sectional nature of the analysis, which implies that the direction of causality could be inverse than the hypothesized. However, albeit extended to a new setting, my argument is based on solid theories about embeddedness and co-marketing consequences, which makes the inverse causality issue less likely than in a

completely novel theory. In the absence of previous researches testing the correlation among these variables in the same settings, therefore, such study represents a first necessary step in order to validate the theory.

6.6. Contributions for research

Firstly, this study contributed to the embeddedness theory of economic behavior, by providing new insights about how the network of collaborative relationships affects the firm-level marketing outcomes. While previous studies extensively investigated the consequences of the firm's embeddedness at various levels, ranging from firm survival (Podolny, 2000), to firm performance (Powell et al., 1999), innovation outcomes (Tsai and Goshal, 1998), or information and knowledge acquisition (e.g. Kale et al., 2000; Rindfleisch et al., 2001), few contributions modeled business networks' consequences for marketing (Hutt et al., 1988; Reingen and Walker, 1987). By focusing on the debate about the competing arguments on the effects of structural and relational embeddedness, this study clarified how these different mechanisms operate on a specific marketing outcome: the effectiveness of CRM.

Referring to structural embeddedness, I grounded my framework on Burt's theory on structural holes (Burt, 1992; 1997) and Coleman's theory on closure (Coleman, 1988), arguing that two alternative structural mechanisms are counter-balancing in determining CRM effectiveness.

On one side, there is an exclusivity mechanism, which is stronger when the firm's ego-network has lower levels of redundancy. The firm maintaining exclusive connections with other partners is able to develop a distinctive CRM program for its customers, which bundles each partner's offering and CRM efforts in a value proposition far difficult to be reproduced, and therefore much more effective in retaining customers and enhancing their purchasing behavior. Moreover, by providing a non-substitutable path of connections, this firm has a greater control over its' partners CRM activities and customers.

On the other side, there is a social control mechanism, which is stronger when the firm's ego-network has higher levels of redundancy. In marketing networks, high density of collaborative ties enables a diffuse social control over the actors, who have a greater incentive in sharing their customer relationships and their customer management skills: through a broader cooperation, such firms enjoy significant advantages in managing their customers, therefore increasing their effectiveness in CRM.

I found a first albeit partial evidence that a firm's CRM effectiveness is enhanced when the redundancy of the relationships within its partners increases. Such result therefore made a contribution for a closure perspective of structural embeddedness effects on marketing outcomes. At the same time, it showed that the brokering strategy of Burt's *tertius* is suboptimal for maximizing CRM effectiveness: since brokers are not under the social control of their partners, they might be indeed in the ideal position for benefiting from partners' customer-based resources, but exactly for this reason they are in the worst position for providing partners with incentives in sharing their customers and the related information.

As for relational embeddedness theories, this study contributed to a further clarification of the tie-strength effects in ego-networks.

I argued that two alternate mechanisms operate also at the level of the firm's direct ties.

On the one side, the strength of collaborative ties acts as an enhancer of collaboration (Krackhardt, 1990). As far as cooperation is strengthened, partnering firms increase the sharing of customer resources such as customer relationships, customer information, and customer management skills, therefore increasing each partner's ability in effectively targeting the most valuable customers with a customized value proposition.

On the other side, however, the strength of collaborative ties binds the partners' ability to develop a distinctive CRM effort. Weak ties, albeit less effectively than strong ties, still enable to a some extent access to partner's endowments of skills, information, and resources related to CRM activities (Granovetter, 1973); at the same time, however, they let partners maintain greater levels of autonomy in their CRM activities, minimizing therefore the overlap between each partner's CRM effort, which instead might constrain the value combination potential ultimately generated for the customer.

By disentangling the network size effect from that of the tie-strength intensity, I found a first albeit partial evidence that performing in CRM is far more a matter of accessing novel resources than of deeply sharing them, therefore providing a contribution for a weak-ties theory of relational embeddedness in CRM alliance networks.

A further contribution to embeddedness theory was made by this study by deepening the analysis about how the structure of the network interacts with other features of inter-firm cooperation in affecting firm-level outcomes.

Specifically, by grounding on previous researches on inter-firm networks (e.g. Gulati, 1998), I argued that the network structure acts as a conduit of information and resources, that flow

through the ties linking the actor to its partners. I therefore proposed that the structural effect is moderated by two mechanisms that affect the flow of these information and resources through the direct ties. On the one hand, the firm's relational embeddedness, i.e. the tie characteristics which impact on the volume (strong ties) / novelty (weak ties) of resources flowing between two actors. On the other hand, the firm's complementarity with its partners, which impact on the value generation potential of the joint CRM effort.

I found that none of these interactions had a significant effect on firm's CRM outcomes, while I also found that the network structure acts more as a higher-order system, which affects the firm-level outcomes more by enabling the social action of its partners than by enabling its individual action over its partners. More specifically, the network structure does not operate in CRM alliance network as a direct conduit of customer relationships and related information, but instead as an enabler of trust that indirectly facilitates the firm's economic behavior. Because the structural mechanisms operates at a social "macro" level, it does not have any significant interaction with the antecedents of CRM effectiveness pertaining the quality and quantity of resources directly flowing through each firm's direct tie at the "micro" level. I believe that this study contributed to increase the understanding of the composite effects of embeddedness, by further investigating the role of the structural and relational component (Rowley et al., 2000), specifically disentangling the micro and macro effect of embeddedness. Secondly, this study contributed to the research stream on complementarity in inter-organizational relationships, by further specifying how complementarity in a CRM alliance network affect the firm-level effectiveness in CRM. Specifically, I broadened previous conceptualization of complementarity in co-marketing alliances by including two main components: (1) the similarities in the customer bases lifestyle and consumption models, as well as purchasing and consumption processes, and (2) the room of integration between the partners' products and services non-overlapping relevant attributes.

I argued that marketing complementarity in the firm's network of partners enhances the benefits for customers, increasing therefore both the switching costs and their willingness to intensify their loyal behavior.

I found evidence that marketing complementarities are a strong predictor of CRM effectiveness. Such findings support the argument that CRM effectiveness does depend from the firm's ability to focus the collaboration activity on those partners that allow the development of externalities in the customers' purchasing and consumption processes.

Thirdly, this study made a contribution to the relationship marketing research stream, by deepening the analysis of the inter-organizational antecedents of the firm's success in managing customer relationships. Existing research in relationship marketing paid little attention to the role of the supplier's web of relationships with other organizational actors in determining the supplier's effectiveness in managing the relationship with the customer. A notable exception to this tendency was the work of Anderson and colleagues (1994), who argued that in business markets the attractiveness of a supplier is influenced by the network context where the supplier is embedded. However, Anderson and colleagues limited the focus to buyer-seller relationships in business market environments, didn't provide systematic evidence in support of the outlined theoretical framework, and most important didn't explained how the supplier's network operates in affecting the supplier's outcomes. In this study, I addressed such issues by extending the argument to consumer markets where CRM finds its largest diffusion, by collecting a small but systematic evidence about the consequences of inter-firm network for relationship marketing programs success, and by analytically modeling the network-based mechanisms underlying the success of CRM. Overall, this study provided a first albeit partial support for a network approach to relationship marketing which points on two main predictors of the firm's CRM program success: the firm's embeddedness in the network of CRM alliances, and its complementarity with the partners composing the CRM alliance network.

Taken together, therefore, such findings contribute to a network view of marketing outcomes (Achrol and Kotler, 1997), which focuses on three levels of analysis of the inter-organizational antecedents for CRM effectiveness. First, the structure of cooperation, as expressed by the redundancy in the firm's ego-network; second the modality of the directly maintained relationships, as expressed by the weakness of the collaborative ties; third, the firm-level attributes of the firm's partners, as expressed by their complementarity with the focal firm.

6.7. Implications for practice

The findings of this study have four main implications for the management of CRM programs.

Firstly, this study highlighted that developing a networking strategy on a CRM program does impact on the success of CRM. The variance in CRM effectiveness across partners (Sharp and

Sharp, 1997) is namely tied to the firms' ability to design a CRM program which leverage on the relationships among partnering suppliers in order to increase the value proposition for the customer. Thus managers who aim at improving the effectiveness of their CRM should not pay attention only to the internal development of processes, values and norms that improve their customer management capabilities (Day, 2000b; 2003) and their customer knowledge management skills (Reinartz and Kumar, 2003). Instead, they need also to search across their organizational boundaries for partners with whom they can collaborate in sharing the customer base and in developing a joint CRM effort which leverage on each partner's skills, customer information, and customer resources.

Secondly, it was shown that the firm's effectiveness in CRM varies with the network partners' characteristics, and more specifically with the marketing complementarities displayed by the overall set of partners (O'Brien and Jones, 1995). More specifically, managers wanting to maximize the return of their CRM alliance strategies should focus on those partners who display the higher fit in terms of the customer base and the higher room of integration in terms of products/services relevant attributes. Namely the joint effect of similar life styles, consumption models, purchasing and consumption processes of the customer bases and of the integration between non-overlapping products and services generate externalities for those customers, who therefore are encouraged in behaving loyally toward the firm which provides access to these opportunities.

Thirdly, a first albeit partial evidence was provided that the firm's effectiveness in CRM varies with the partnership characteristics, and more specifically with the overall strength of the collaborative relationships in the network. The implication is that managers should carefully consider when it is worth to strengthen the collaborative relationships with their partner. While strong relationships breed advantages in terms of sharing of customer relationships, customer knowledge and customer management skills, they also bind the firm's ability to develop a distinctive CRM effort. The homogenization of the CRM activity across partners results in a lower awareness of the partners' specific relational proposition toward the customers, who therefore display a lower engagement in the relationship.

Fourthly, a first albeit partial evidence was provided that the existence of indirect ties among a firm's partners positively affects the firm's effectiveness in managing customer relationships.

This result has two main implications for the development and management of alliances on CRM programs. On the one hand, it implies that, while selecting its partners, a firm should pay attention to the overall pattern of relationships maintained by those partners. Holding other conditions, a firm A should prefer as a partner a firm B that already maintains alliances with the A's partners. Namely when the network of alliances is "closed" the firm A can have higher reliance in a cooperating behavior of its partners, which converge toward the goal of creating value for the shared customers, ultimately resulting in higher levels of effectiveness in managing customer relationships. On the other hand, it implies that when entering in a CRM alliance network, a firm *might* enjoy superior effectiveness in managing customers, but *surely* ceases part of its control over CRM performance to its network of partners. Hence, managers who want to leverage on CRM alliance networks to increase their firm's CRM effectiveness should extend the focus of collaboration from the single dyadic partnership relationship to the overall web of partners that are linked to their CRM program, in order to monitor how the social environment of partners influences their own CRM activity.

6.8. Future research

Several indications can be provided about how future research might enhance the understanding of how alliance networks impact on the firm's success in managing customer relationships.

First of all, future studies should extend the sample size, in order to further verify the contribution of redundancy and tie-strength to the firm's CRM effectiveness. This study represented one of the first structured efforts to collect systematic evidence about sources of variance across CRM program performance, but resulted in an overall small sample size ($n=22$): further research is needed in order to fully assess the statistical validity of the results provided during this analysis.

Second, it might be interesting to verify how variations in CRM effectiveness would be related *over time* to variations in the firm's network at the level of the structural and relational embeddedness, as well as at the level of the overall marketing complementarity in the ego-network. This study, either if grounded on solid theories about embeddedness and complementarity effects, was developed on the basis of a cross-sectional analysis, which does not allow to verify the direction of the existing relationship among variables. Future

researches should develop longitudinal designs in order to verify the correctness of the modeled causal relationships between CRM effectiveness and the hypothesized antecedents.

Third, future efforts might be devoted to the development of a stronger measure of effectiveness, based on objective instead of subjective data. In this study I collected primary data through a survey instrument, by asking the respondent to assess its' firms CRM effectiveness on the basis both of subjective and of objective indicators. However, only 8 over 22 respondents for the frequency of purchases indicator and 6 over 22 respondents for the duration of purchases indicator provided the quantitative information needed for computing the objective measure, and therefore I dropped it from the final analysis. Such result, in fact, was not totally unexpected since during the pre-test phase a few interviewed managers highlighted that quantitative data on CRM programs are confidential information. Since this issue was not solved by adding a detailed confidentiality statement, further studies may try to overcome it or by widening the sample size, or by defining alternative low-intrusive measures.

Fourth, future studies should contribute to further specify how complementarity works in CRM alliance networks. In this analysis a synthetic five-item measure of complementarity was adopted in order to collect data about the whole set of a firm's CRM alliances. However, it was highlighted that complementarity is a complex construct embodying a few externality components. Future research might try to explode such construct in order to analytically identify the contribution of each of its components to the explanation of variance in CRM effectiveness.

Fifth, more research is needed in order to deepen our understanding of the efficiency side of the performance of CRM alliance networks. This study limited the focus to the consequences of CRM alliance networks at the level of the customer base loyal behavior. However, I get hints from the qualitative interviews during the pre-test phase that CRM alliance networks also breed efficiency in the CRM program, because they allow partners to reduce the customer relationship effort by sharing the investments in the program with the partners. Such a view, which is consistent with a transaction cost perspective of cooperation (Williamson and Ouchi, 1981), could be further explored in order to enhance our understanding about how CRM alliance network affect the economics of customer relationships at the firm level.

Sixth, future research efforts should be devoted to deepening our understanding of how control over actors is developed in a network structure. This study suggested that power and

control are much more a matter of networks of actors than a matter of individual actors: in CRM alliance networks, nor prominent firms neither brokering firms gained significant benefits from their position, while firms belonging to dense networks, acting as *primus inter pares*, enjoyed higher levels of effectiveness. However, the presence of multi-collinearity issues did not allow to jointly test in a comprehensive model the overall contribution of direct and indirect ties to the explanation of variances in CRM effectiveness. Therefore, further efforts are needed in order to assess to what extent power and control over partners depend on the existence of indirect ties rather than being a matter of the existence of direct ties.

6.9. Conclusion

In conclusion, this study made a contribution to the literature on customer relationship management and relationship marketing, by providing an analytic theoretical framework which models the inter-organizational antecedents of a specific outcome of the firm's relationship marketing effort, the customer base's loyal behavior.

I tested such framework on a small sample (n=22) of firms belonging to the airline industry, providing a first evidence - albeit partial and subjected to further confirmation - that networks of co-marketing alliances on CRM do impact on the firm's effectiveness in managing customer relationships.

I found that a first source of effectiveness lays at the attribute level of the firm's partners, and more specifically at the level of the marketing complementarities existing between the firm and its partners at the level of the customers and products/services. A second source of effectiveness lays in the characteristics of the co-marketing alliances, and particularly in the weakness of the ties which allow partnering firms to maximize the variety of accessed customers and related information while maintaining autonomy in defining their CRM programs. A third source of effectiveness lays in the cohesion among a firm's partners, which enable trust in the collaborative environment, therefore enhancing the firm's ability to rely on its partners in order to increase the effectiveness in dealing with customers.

Moreover, this study contributed to the literature on marketing networks and more generally on embeddedness of economic behavior.

I found that two distinct embeddedness mechanisms operate in a marketing network: a novelty mechanism acting at the local level of direct ties, and a social control mechanism acting at the ego-network level of indirect ties. I didn't find any significant interaction

between the network structures and the tie-characteristics, nor between the structure and the firm-based characteristics expressed by the complementarity at the level of its partners. This findings contribute to a view of inter-firm network structure as a higher-order system which indirectly enables cooperation and higher effectiveness of its actors in their economic behavior.

I therefore hope that this findings will lead to further investigation (1) at the general level of the antecedents of CRM effectiveness laying outside the firm's boundaries and the direct relationship buyer-seller, and (2) at the specific level of the embeddedness research, in order to provide a more analytic theory explaining the different roles plays by the network socially and at the level of the single-tie relationships.

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Appendices

Appendix A – Pre-test letter and feedback sheet

December 4, 2003

Mr. *Executive_FirstName Executive_Lastname*
Company_Name
Company_Address
Company_City Company_State
Company_Country

Dear Mr. *Executive_Lastname*,

In this study we aim at understanding how companies in consumer markets can improve the performance of their loyalty programs by partnering with other firms through co-marketing alliances.

We would really appreciate it if you could provide us with feedback about the format, content of the questionnaire, included the cover letter and the instructions.

Please fill out the survey and mark in the following field the number of minutes it takes you to do so:
Min. _____

After having filled out the survey, please indicate us how you would improve the survey as refers to the following issues:

- Does the cover letter motivates you to answer the survey?
- How would you change the instructions to be clearer?
- What questions, if any, were difficult to understand and why?
- What in the format of the questionnaire made eventually difficult for you to understand how to fill it out?
- Which questions, if any, were somehow uncomfortable for you and why?
- Do you have any additional suggestions on how to improve the survey?

This survey is endorsed by the Bocconi University and I am a Ph.D. candidate at the IEGI Department of the Bocconi University. If you have any questions about this study, please contact me by telephone at the +39.02.58363719 or by email at fabrizio.zerbini@uni-bocconi.it.

Thank you very much for your help,

Fabrizio Zerbini

Project Coordinator
IEGI Department - Bocconi University

Appendix B - Cover letter

January 19, 2004

Mr. *Executive_FirstName Executive_Lastname*
Company_Name
Company_Address
Company_City Company_State
Company_Country

Dear Mr. *Executive_Lastname*,

I am writing you to ask for your help with a survey that I am conducting as part of my doctoral dissertation. The purpose of my research is to develop a better understanding of how companies like yours can **increase the effectiveness of their customer loyalty program** by partnering with other companies **through co-marketing agreements**.

A shared view among managers and scholars is that the diffusion of loyalty programs is increasingly weakening their effectiveness. Imitation by competitors makes difficult to differentiate the program, which becomes progressively part of the company's baseline offer. Co-marketing strategies, however, seem very promising for a successful management of loyalty programs, because they allow partners to enlarge the scope of the program on a wider customer base. Moreover, partners can leverage on product/service complementarities, providing customers with additional and distinctive benefits which are difficult to be imitated by competitors, and therefore much more effective.

By analyzing the insights provided by your and other companies in the airline industry, I can provide scientific bases for modeling the effects of co-marketing strategies on the performance of loyalty programs.

Would you please take **20 minutes** to complete and return the enclosed questionnaire?
Please be assured that your responses will be kept **confidential**.

I know that your time is valuable, so to express my appreciation I will send you, if you like, a **personalized executive summary** of the findings of this study. This summary will compare your responses with the average responses of the sample and will help you to better understand how your loyalty management practices measure up.

This survey is endorsed by the Bocconi University and I am a Ph.D. Candidate in the IEGI Department at the Bocconi University. If you have any questions about this study, please contact me by telephone at the +39.347.3541896, or by email at fabrizio.zerbini@uni-bocconi.it.

Thank you very much for your help.

Best Regards,

Fabrizio Zerbini

Appendix C – Instruction sheet

Instruction sheet

Thank you for your participation in this study on how companies can successfully manage customer loyalty programs.

This research focuses on an approach which has seen a huge diffusion in recent years: the management of customer loyalty programs through co-marketing partnerships. The aim of this study is to identify the key mechanisms underlying an effective management of co-marketing partnerships on loyalty programs, using a scientific, quantitative approach in which this questionnaire plays a critical role.

Some initial questions will ask you to provide few descriptive data about your company's business and loyalty management approach. Then most of the following questions will require you to assess the extent to which you agree with a given statement, by circling (or inserting when requested) a number from 1 (maximum level of disagreement) to 7 (maximum level of agreement).

Some questions in the survey may seem similar; however, for scientific purposes, it is very important that you try to respond to every question, giving at least an estimate when you are not sure about the exact answer. If you are unable to answer to a particular question, leave it blank and proceed to the next one. However, please make every effort to answer all questions as precisely as possible since the validity of this study's results depends on complete responses.

When finished, please fax the questionnaire back to me at (+39.02.58363790) or mail it back in the self-addressed envelope which you find enclosed in the envelope you received with this document. For any question about this survey, please call me at the +39.347.3541896 or email me at the fabrizio.zerbini@uni-bocconi.it.

Thank you again for your kind cooperation

Appendix D – Confidentiality statement

CONFIDENTIALITY STATEMENT

Fabrizio Zerbini, Ph.D. Candidate at Bocconi University, coordinator of the research project “Trends In Customer Relationship Marketing: Towards Loyalty Networks In Travel Industries” (the “*Researcher*”), with a mailing address at the Management & Business Administration Department, Bocconi University, Viale Filippetti, 9, 20122 Milano Italy, here agrees as of January 19, 2004 as follows:

Background: the companies and individuals (“*Participants*”) receiving this letter have trade secrets and other proprietary information relating to their arrangements (“*Confidential information*”) which they wish to maintain in confidence. The researcher desires to receive information which might be considered as Confidential Information solely for research purposes as part of the researcher’s Doctoral Dissertation and in accordance with the purposes of a state-supported, academic educational institution (“*Agreed purpose*”) and recognizes the importance of keeping such information in confidence.

Confidentiality: the researcher shall maintain in confidence all Confidential information, including names and other identifying information, and shall use it only for the Agreed purpose, unless otherwise agreed in writing or to the extent required by law, provided the Participant has received advance notice of the disclosure. All materials containing Confidential information will be stored in a locked office and locked, password protected files, such that the researcher and the assistants under his responsibility are the only individuals with access to this information. Once the data from the hardcopy source of this information (the “*Survey*”) has been entered into a database for empirical examination, the Participants’ names and other information which might be used to identify Participants, companies and relationships will be re-coded. Further, the Survey will be destroyed once all the research is completed.

Definition: For purposes of the Agreement, Confidential Information means all individual, economic, and technical information, business relationships, or trade secrets furnished by the Participants to the researcher, except for that which: (1) is publicly available or (b) is required to be disclosed by any operation of the law.

Publication: As per the foregoing, the researcher will not disclose the identities of Confidential Information or Participants in any publications. All reports and publications, interpretations and examination of Confidential Information will only be based on aggregated results.

Fabrizio Zerbini
Project Coordinator
Bocconi University

Appendix E – Remind Letter

February 11, 2004

Mr. *Executive_FirstName Executive_Lastname*
Company_Name
Company_Address
Company_City Company_State
Company_Country

Dear Mr. *Executive_Lastname*,

About three weeks ago I sent you by mail a survey for my doctoral dissertation, seeking your impressions about the effectiveness of co-marketing alliances on customer loyalty programs.

The purpose of my research is to develop a better understanding of how companies like yours can **increase the effectiveness of their customer loyalty program** by partnering with other companies **through co-marketing agreements**. By analyzing the insights provided by your and other companies in the airline industry, I can provide **scientific bases** for modeling the effects of co-marketing strategies on the performance of loyalty programs.

If you have already completed the survey and returned it to me, please accept my sincere thanks. If not, would you please take **20 minutes** to complete and return by email or fax the enclosed questionnaire (an electronic version of the questionnaire is also available at the web address: <http://knowledge.sda.uni-bocconi.it/trends>.)?

Because the survey has been sent to only a small, but representative, sample of companies it is extremely important that yours also be included in the study if the results are to accurately represent the opinion of all those in your industry.

Please be assured that your responses will be kept confidential.

I know that your time is valuable, so to express my appreciation I will send you, if you like, a **personalized executive summary** of the findings of this study. This summary will compare your responses with the average responses of the sample and will help you to better understand how your loyalty management practices measure up.

This survey is endorsed by the Bocconi University and I am a Ph.D. Candidate in the IEGI Department at the Bocconi University. If you have any questions about this study, please contact me by telephone at the +39.347.3541896, or by email at fabrizio.zerbini@uni-bocconi.it.

Thank you very much for your valuable help.

Sincerely,

Fabrizio Zerbini

Appendix F – Survey questionnaire

SDA Bocconi



Survey

**TRENDS IN CUSTOMER RELATIONSHIP MARKETING:
TOWARDS LOYALTY NETWORKS IN TRAVEL INDUSTRIES**

January 2004



Section A – Information about the company

We first would like to ask you a few questions about the business of your Company and your activity in the Company.

A.1 Name of the Company _____

A.2 Country of incorporation _____

A.3 Total number of employees of the Company at the end of the last year

2001 2002

2003

A.4 Company's annual sales (millions of US\$)

A.5 Company's % sales across regions in the past year

North America	<input type="text"/>
Latin America	<input type="text"/>
Europe	<input type="text"/>
Middle East	<input type="text"/>
Africa, Indian	<input type="text"/>
Asia*, Pacific	<input type="text"/>
Total	100%

*Included China

2001 2002

2003

A.6 Company's annual expenses in advertising and promotion (millions of US\$)

A.7 Your position in the Company _____

A.8 What are the activities related to the customer loyalty management that you typically perform in your firm?

Section B – Information about the customer loyalty program

In this section, we would like to ask you a few questions about the way you manage customer loyalty programs in your Company.

In the case your Company does not offer a loyalty program by its own, but is affiliated to one or more partner's loyalty program, please consider the main loyalty program you are affiliated to.

In the case your Company does offer more than one program – for instance because you differentiate the programs per levels of spending – please consider all your programs as an aggregate, by referring in your answers to the whole set of programs and subscribers.

For the purposes of this survey, the customers who subscribe a loyalty program are defined as "cardholders". Please consider as "cardholders" the subscriber of the loyalty program also if you do not use a card to identify them.

B.1 Our Company offers its own customer loyalty program. YES NO

If your answer to B.1 is NO, please go to the question B.6., otherwise please continue with B.2.

B.2 Our Company's customer loyalty program is currently named _____
B.3 Our Company's customer loyalty program started first in the year
B.4 The total number of cardholders at the end of the last year was
B.5 Our Company maintains co-marketing agreements on the customer loyalty program with other companies YES NO

If the answer to B.5 is YES, please skip B.6. – B.9. questions and go to the C section.
If the answer to B.5 is NO, please skip B.6. – B.9. questions and C section questions and go straight to the D section.

B.6 Our Company does not offer a customer loyalty program by its own but is affiliated to a partner's loyalty program through a co-marketing agreement YES NO
B.7 The current customer loyalty program we are affiliated to is named _____
B.8 The co-marketing agreement on the loyalty program is active since the year
B.9 The total number of our customers who were subscribers of this program at the end of the last year was

Section C – Information about the partners of the program

In this section, we would like to ask you to identify the partners with whom you are collaborating on a loyalty program (either sponsored by your company or your partner or co-sponsored) through a formal co-marketing agreement since at least January 1st, 2002.

For the purposes of this survey, a formal co-marketing agreement is defined as a partnership which is formalized through a contract or through the creation of a new company; collaboration on a loyalty program entails any marketing activity such as joint sales promotion, advertising, or customer rewarding which is exclusively dedicated to customers who are subscribers of a loyalty program maintained by your company and/or by your partner. Such agreements may include both companies in your industry and companies in other industries.

Please use the following instructions and the sample table as a reference.

In the left-hand columns of the table below, please write in the names of the Companies with which you maintain the main co-marketing agreements on a customer loyalty program (partner-row), specifying their business according to the following taxonomy.

Partner's main business
Airlines
Car Renting
Hotels
Credit Cards
TLC
Financial Services
Grocery Retailing
Gasoline Service Stations
Other:.....(specify)

Then for each partner-row of the table below, please rate the degree to which the following B.1.-B.8 items accurately describe the nature of your firm's overall relationship with the partner, by inserting for each statement a number between 1 and 7 according to the following scale of disagreement/agreement.

Degree of agreement	Scale
Strongly disagree	1
Disagree	2
Weakly disagree	3
Do not disagree nor agree	4
Weakly agree	5
Agree	6
Strongly agree	7

SAMPE TABLE

		C.10. Products/services of this partner and ours are complementary in satisfying customer needs													
		C.9. Products/services of this partner enhance the benefits of our products and services towards the customer													
		C.8. Products/services of this partner and ours are consumed in very similar occasions													
		C.7. Products/services of this partner and ours are purchased in very similar occasions													
		C.6. Customers of this partner and ours have very similar lifestyles													
		C.5. We expect that we will be working with this partner far into the future													
		C.4. We share close social relations with the members of this partner													
		C.3. The relationship with this partner can be defined as "mutually gratifying"													
		C.2. We have several people who collaborate with this partner during the year													
		C.1. We have several phone conversations with this partner during the year													
#	Partner's name	Partner's main business	Disagree Strongly	Disagree	Disagree	Disagree	Disagree	Disagree	Disagree	Disagree	Disagree	Disagree	Disagree	Disagree	Disagree
1	Air Middle East	Airlines	4	2	2	1	4	4	7	6	5	6			
2	National Flowers	Other: flower shop.....	6	7	7	6	1	2	4	5	3	3			

Strongly disagree with C.1. statement about Air Middle East

Strongly agree with C.2. statement about National Flowers

Section D – Information about the cardholders of the program

In this section we would like to ask you a few questions about the purchasing behavior of your customers. Please circle the number to the right of each statement that best represents how customers behave according to your knowledge.

		Strongly Disagree						Strongly Agree
		←←						→→
D.1.	We have many cardholders who purchase our products/services with high frequency	1	2	3	4	5	6	7
D.2.	We have many cardholders who almost always prefer our products/services to those of our competitors	1	2	3	4	5	6	7
D.3.	We have many cardholders who purchase high volumes of our products/services	1	2	3	4	5	6	7
D.4.	We have many cardholders who purchases our most expensive products/services	1	2	3	4	5	6	7
D.5.	We have many cardholders who continue to regularly purchase our products/services over time	1	2	3	4	5	6	7
D.6.	We have many cardholders who remain our customers for many years	1	2	3	4	5	6	7

Now, we would like to ask you to estimate how often (in terms of weeks) your cardholders purchased your products/services in the last three years.

		2001	2002	2003
D.7.	In 200x our cardholders purchased our products/services on average each: (weeks)			

Finally, we would like to ask you to estimate the average lifetime of your cardholders in the last three years.

		2001	2002	2003
D.8.	In 200x our cardholders were subscribing the customer loyalty program on average for: (years)			

THANK YOU VERY MUCH FOR YOUR VALUABLE HELP!

Please use the remainder of this page for any comments or questions you may have

Appendix G – Executive summary request form

EXECUTIVE SUMMARY REQUEST FORM

*If you like to receive an executive summary of the findings of this research, please check the following box and provide us with your personal information**

YES, I would like to receive a personalized executive summary of the research "Trends in Customer Relationship Marketing: towards Loyalty Networks"

Personal information:

Title	<input type="text"/>
First Name	<input type="text"/>
Family Name	<input type="text"/>
Company	<input type="text"/>
Position	<input type="text"/>
Email	<input type="text"/>

**According to the Italian Data Protection Law (art.13 - D.Lgs. no. 196/2003), we ensure that such information will not be disclosed nor used for any other purposes than those specified in the confidentiality statement.*