Paavo Ritala

COOPETITIVE ADVANTAGE – HOW FIRMS CREATE AND APPROPRIATE VALUE BY COLLABORATING WITH THEIR COMPETITORS

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ABSTRACT

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Collaboration between competing firms (coopetition) has emerged as an important issue for business practice in many industries. Extant literature has examined coopetition on many levels of analysis, but lacks clarity in distinguishing it explicitly from cooperation between non-competing organizations. Because of this, the performance implications of coopetition from the perspective of an individual firm are still ambiguous – some research suggests positive results whereas other studies suggest detrimental outcomes. The aim in this dissertation is to narrow these gaps by exploring how firms create and appropriate value through collaboration with their competitors.

The dissertation is divided into two parts. The first part comprises an overview of the relevant literature, as well as the conclusions of the whole study, and the second part includes six research publications. Both qualitative and quantitative methodologies are utilized. The results suggest that coopetition embodies the distinctive logic of value creation and appropriation from the perspective of an individual firm, and thus differs in terms of performance implications from cooperation between non-competitors. The distinction comes from the fact that competitors have somewhat similar understanding, capabilities and interest related to certain markets, which is potentially both challenging and beneficial in terms of the individual firm's competitiveness. It appears from the findings that there are distinctive firm-external and firm-specific factors affecting the success of a coopetition strategy.

This study makes three main contributions. First, on the conceptual level it shows the distinction between coopetition and cooperation between non-rivals as a collaborative inter-organizational relationship. Secondly, it sets out a framework and propositions that enhance understanding of how value is created and appropriated in coopetition from the perspective of an individual firm. Thirdly, it offers empirical evidence of how coopetition affects firms' innovation and market performance, and identifies the focal internal and external factors involved. In general terms, the thesis adds to our knowledge of how a firm can successfully utilize a coopetition strategy in its pursuit of improved performance.

Keywords: coopetition, competition, cooperation, value creation, value appropriation, game theory, resource-based view, transaction cost economics
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Paavo Ritala

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5. Ritala, Paavo (2010). **Coopetition strategy – when is it successful? Empirical evidence on innovation and market performance.** Working paper, submitted for review.

6. Ritala, Paavo and Hurmelinna-Laukkanen, Pia (2009). **Incremental and radical innovation in coopetition – The role of absorptive capacity and appropriability.** Earlier version presented at the 16th International Product Development Management Conference, June 7-9, 2009, Enschede, The Netherlands. Revised and further submitted version.

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PART I: OVERVIEW OF THE DISSERTATION

1. INTRODUCTION

Co-opetition means cooperating to create a bigger business "pie",
while competing to divide it up

Brandenburger and Nalebuff, 1996

1.1. Research background and motivation

In recent decades competitive advantage and firm performance have been the most heavily emphasized areas of strategic management research and practice. The focus in the mainstream strategy literature in the 1980s was on showing the connection between the competitive advantage of a firm and a favorable industry position (Porter, 1980, 1985). A firm in a position with few or no rivals and strong bargaining power was seen to possess competitive advantage. Shortly after this, internal attributes such as unique resources, capabilities, and knowledge came under closer scrutiny as a source of competitiveness (Barney, 1986, 1991; Grant, 1996; Penrose, 1959; Teece et al., 1997; Wernerfelt, 1984). Recently however, both the scientific community and business practitioners have paid increasing attention to the fact that firms are intertwined in complex networks of interactions with other organizations (Grant and Baden-Fuller, 1995; Gulati et al., 2000; Jarillo, 1988). Furthermore, it has been recognized that such networks may be a major source of competitive, or collaborative/relational advantage (Duschek, 2004; Dyer and Hatch, 2006; Dyer and Nobeoka, 2000; Dyer and Singh, 1998; Ireland et al., 2002). According to this logic, firms that are successful in utilizing, combining, and acquiring the resources of other firms in alignment with those of their own are able to achieve greater efficiency and effectiveness in their businesses than their rivals (Das and Teng, 2000b; Grant and Baden-Fuller, 2004).

According to the accumulating research on inter-organizational alliances and networks, the additional competitive value that such arrangements provide derives from pooling and utilizing valuable resources and capabilities in cooperation with complementary actors, thereby creating

unique and valuable synergies (Dyer and Singh, 1998; Harrison et al., 2001; Madhok and Tallman, 1998). Consequently, firms have been known to compete against each other through their complementary networks of stakeholders, traditionally perceived as comprising a heterogeneous group of suppliers, customers, and other partners such as research institutes and universities.

Although it is relatively easy and straightforward to distinguish between firms that are competing against each other through their networks, the business reality is much more complex in terms of separating between competing and collaborating actors. In fact, an increasing number of new alliances are being formed between competing firms, especially in knowledge-intensive sectors (Arranz and Arroyabe, 2008; Breznitz, 2009; Carlin et al., 1994; Contractor and Lorange, 2002; Duysters et al., 1999; Harbison and Pekar, 1998). It has been suggested that the traditional rivalry view in strategy research is not well suited to analyzing such relationships (Luo et al., 2007). As an alternative, the concept of *coopetition* has emerged and is utilized in research as well as in business practice, the idea being that firms not only either collaborate or compete with certain stakeholders, but they also operate through these paradigms simultaneously (Bengtsson and Kock, 2000; Brandenburger and Nalebuff, 1995, 1996; Lado et al., 1997). In other words, in addition to working with complementary non-competitor partners firms also collaborate with their competitors in the quest for improved performance and innovation outcomes.

Although much of the early literature and policy discussion focused on cartels and other price-discriminating effects in analyses of collaboration between competitors (Lamoreaux, 1985; Pate, 1969), it has become increasingly apparent that coopetition can actually increase competition, innovation and technological development, and may thus be beneficial to end customers as well as to the firms involved (Jorde and Teece, 1990; von Hippel, 1987). In fact, coopetition is often highlighted in a development and innovation context, in which rival firms collaborate to create interoperable, high-value products and services and still compete fiercely for customers (Fjelstad et al., 2004; Gnyawali et al., 2008; Gueguen, 2009; Jorde and Teece, 1990; M’Chirgui, 2005; Möller and Rajala, 2007; Quintana-García and Benavides-Velasco, 2004; Spiegel, 2005; Tether, 2002). The value-creating effects of coopetition as opposed to collusion have been increasingly accepted by policymakers across Europe, Asia, and the USA (Gnyawali et al., 2008). Following

these lines of thought this thesis also focuses on the value-increasing effects of coopetition rather than on anti-competitive policy issues.

Even though coopetition has increased in prevalence and importance in recent years, the phenomenon itself is anything but new. In fact, many capital-intensive industries have a long history of co-manufacturing, design, and other lateral initiatives among competing firms (Scranton, 1997). There is increasing evidence in many industries of collaboration among global and national competitors in order to jointly establish industry standards, create new products and services, share the risks and costs of R&D and manufacturing, decrease lead times, and gain access to national and international marketing and delivery channels (Arranz and Arroyabe, 2008; Baughn et al., 1997; Bengtsson and Kock, 2000; Lechner and Leyronas, 2009; Luo, 2004; Tether, 2002), for example. Coopetition is a feature in a wide variety of sectors, including ICT (Breznitz, 2009; Dittrich and Duysters, 2007; Gueguen, 2009; Ritala et al., 2008), healthcare (Barretta, 2008; LeTourneau, 2004; Peng and Bourne, 2009), air travel (Garrette et al., 2009; Oum et al., 2004), food distribution (Kotzab and Teller, 2003), and the automotive industry (Gwynne, 2009; Segrestin, 2005).

Major drivers of coopetition include the increasing pace and cost of technological development, technological convergence, and a move toward inter-organizational networking resulting in network-against-network competition, meaning that horizontal actors form competing constellations (Duysters et al., 1999; Gnyawali and Park, 2009). In addition, the competitive logic in many knowledge-intensive industries has become *de facto* global, which helps competing firms to identify potentially lucrative global alliances (Luo, 2004, 2007). Furthermore, the constantly changing and developing technological interfaces, infrastructures and standards in various industries require intense collaboration between competitors (Fjelstad et al., 2004; Mione, 2009). Take, for example, the drafting of a standard for the current generation of high-definition laser disks. Two separate networks supported the rival Blu-Ray and HD-DVD standards, each comprising firms allied behind one of these alternatives. After a lengthy battle between the two options, the Blu-Ray consortium led by Sony emerged as the winner. The competing firms allying with Sony through the consortium at the time were able to benefit greatly from the head start that resulted from allying with the right rival. Coopetition in automobile manufacturing also

shows that allying with the right competitors can breed success for individual firms. It is customary to manufacture differently branded cars over shared platforms, and then to compete for customers in the end-product markets. Manufacturers allying with the right partners are able to improve efficiency and effectiveness, and to gain innovation benefits (Gwynne, 2009; Segrestin, 2005).

Empirical research has shown that coopetition incorporates the potential for major benefits such as improvement in firm performance and innovativeness (Luo et al., 2007; Oum et al., 2004; Quintana-García and Benavides-Velasco, 2004; Tether, 2002), and also for considerable risks such as the possibility of losing proprietary knowledge to a competitor and deterioration in alliance performance (Hamel, 1991; Kim and Parkhe, 2009; Park and Russo, 1996). However, although coopetition is undeniably risky, it is also often a strategic necessity. Thus, given its presence in the ever globalizing and networked competitive environment, there is a need for studies focusing on how individual firms cope with such relationships. The general aim of this thesis, therefore, is to identify the premises of the firm's "coopetitive advantage", in other words the success factors of a coopetition strategy from the perspective of individual company performance. This is an objective that requires a focus on firm-internal as well as contextual, firm-external factors, both of which have an effect in terms of gaining such advantage.

1.2. Research gaps and research objectives

Research on coopetition was said to be at a very early and conceptual phase in 2002 (Dagnino and Padula, 2002). The same holds true today. With a few exceptions, it has focused on conceptual development and explorative single-industry case studies. The undeveloped phase of the research area is understandable given that inter-organizational relationships in general have been under scientific and practical scrutiny only for a short period of time (de Man and Duysters, 2005). Furthermore, competitive and collective strategies have been seen to disturb or contradict each other in terms of reducing industry-level competition and thereby leading to price collusion (Pate, 1969), or decreasing firm-level competitiveness (Bresser, 1988), until only recently (Brandenburger and Nalebuff, 1996; Gnyawali et al., 2006; Lado et al., 1997). Thus, given the

current emergent state of the research, there is a great deal of ambiguity concerning the effects of coopetition on firm-level performance.

The first gap in the literature addressed in this study concerns the lack of distinction between coopetition and other types of collaboration with non-competitor stakeholders. In order to establish how firms can benefit from coopetition it is essential to distinguish it conceptually and as a relationship form from other types of collaborative arrangements. Consequently, studies should focus on the *differences between coopetition and non-competitor collaboration*, and not only on alliances between competing firms. Concentrating on the distinction, and conducting research that highlights its implications in the context under scrutiny, could significantly improve current understanding of the phenomenon.

Secondly, there is a need for more research on the relationship between coopetition and firm performance. This gap is related to the first one in that it is easier to address if the distinctive features of coopetition are understood. Indeed, according to the current empirical evidence there remains some confusion over whether coopetition is a successful strategy in the first place, and if it is, what are the contextual and firm-specific factors that have an effect on its success. Some studies point out that it is a risky relationship, which often ends in failure or decreased alliance performance (Kim and Parkhe, 2009; Park and Russo, 1996). Others suggest that the risks inherent in its internal logic may lead to a potentially detrimental “learning race” between firms (Bosch-Sijtsema and Postma, 2009; Hamel, 1991), or to relationship conflicts (Das and Teng, 2000a; Tidström, 2009). On the other hand, there is evidence that coopetition may have a positive effect on market performance (Luo et al., 2007) and innovativeness (Belderbos et al., 2004b; Quintana-García and Benavides-Velasco, 2004; Tether, 2002). In terms of success factors, the main focus in the extant research has been on identifying how an alliance between competitors should be managed in order to avoid the risks and maximize the benefits (Chin et al., 2008; McGill, 2007; Morris et al., 2007; Oxley and Sampson, 2004). The major implications concern structuring and designing alliances so as to take into account the competitive dynamics between the partner firms. Focusing on alliance-specific issues is indeed important, but leaves space for studies exploring the firm-specific potential of coopetition – in other words the premises of gaining “coopetitive advantage”. In fact, according to Gnyawali et al. (2008, p. 396) there are no

large-scale, systematic empirical studies examining the performance outcomes of a coopetition strategy. This thesis pursues to narrow this gap.

To conclude the above discussion on the research gaps, it could be said that, from the perspective of the individual firm it remains unclear what the distinctive features of value creation and value appropriation are in coopetition as opposed to collaboration between non-competitors, and what are the performance implications of a coopetition strategy. Clarification of these issues would enhance understanding of the differences between competitive vs. non-competitive stakeholders as collaboration partners, and of the strategic implications of such partnerships on an individual firm's performance.

The emphasis in this thesis is on the firm and its pursuit of competitive advantage – and coopetition as a firm-specific strategy in this endeavor. In general, developing an understanding of how a firm can benefit and gain competitive advantage from interfirm collaboration requires knowledge of the logic of both value creation and value appropriation (Lavie, 2007; MacDonald and Ryall, 2004), and the separation between these processes is even more pronounced in the case of coopetition (Gnyawali et al., 2008). Consequently, the focus is on value creation and value appropriation as distinct but intertwined issues in gaining competitive benefits from coopetition. The main research question is as follows:

How is a firm able to create and appropriate value by collaborating with its competitors?

Four separate sub-questions are formulated to facilitate analysis of different aspects that are relevant to the main research question. The first of these concerns the features that distinguish coopetition. Such distinction is highly relevant in that practically every type of collaborative relationship incorporates both competitive and collaborative issues (Cimon, 2004; Clarke-Hill et al., 2003; Das and Teng, 2000a; Oliver, 2004; Wolff and Reed, 2000). Thus, the fact that the collaborating actors are competitors in the end-product markets needs to be analyzed and taken into account. Hence the first sub-question is:

Q1: How can coopetition be distinguished from cooperation between non-competitors?

The second sub-question concerns the fundamental issue of defining economic success - firm performance. It is addressed by means of a literature review and an empirical examination of the performance implications of coopetition for firm-level performance.

Q2: What is the relationship between coopetition and firm performance?

The rationale and the logic of coopetition in comparison to collaboration between non-competitors are addressed in the third sub-question. Whereas the focus in the first sub-question is on the distinctive features of coopetition, here it is on the specifics of value creation and appropriation, and their interplay from the firm perspective. The aim is to gain a better understanding of the possible success factors related to a coopetition strategy. Hence:

Q3: What is the role of coopetition in value creation and appropriation?

The fourth and final sub-question concerns the external and internal success factors involved in coopetition. The search for answers builds on the insights gained from the first three, in that the identified distinguishing factors and performance implications of coopetition provide guidance to focus on the most important issues in terms of the success of a coopetition strategy. The fourth sub-question is formulated as follows:

Q4: What are the focal external and internal factors involved in coopetition success?

1.3. Outline of the study and the linkages of the publications with the research questions

This thesis comprises an introduction part and six separate publications. Each publication addresses a distinct sub-question, and the introductory part discusses the overall results of the study in the light of the individual sub-questions, and offers conclusions in terms of answering the main research question. Figure 1 gives the outline of the study.

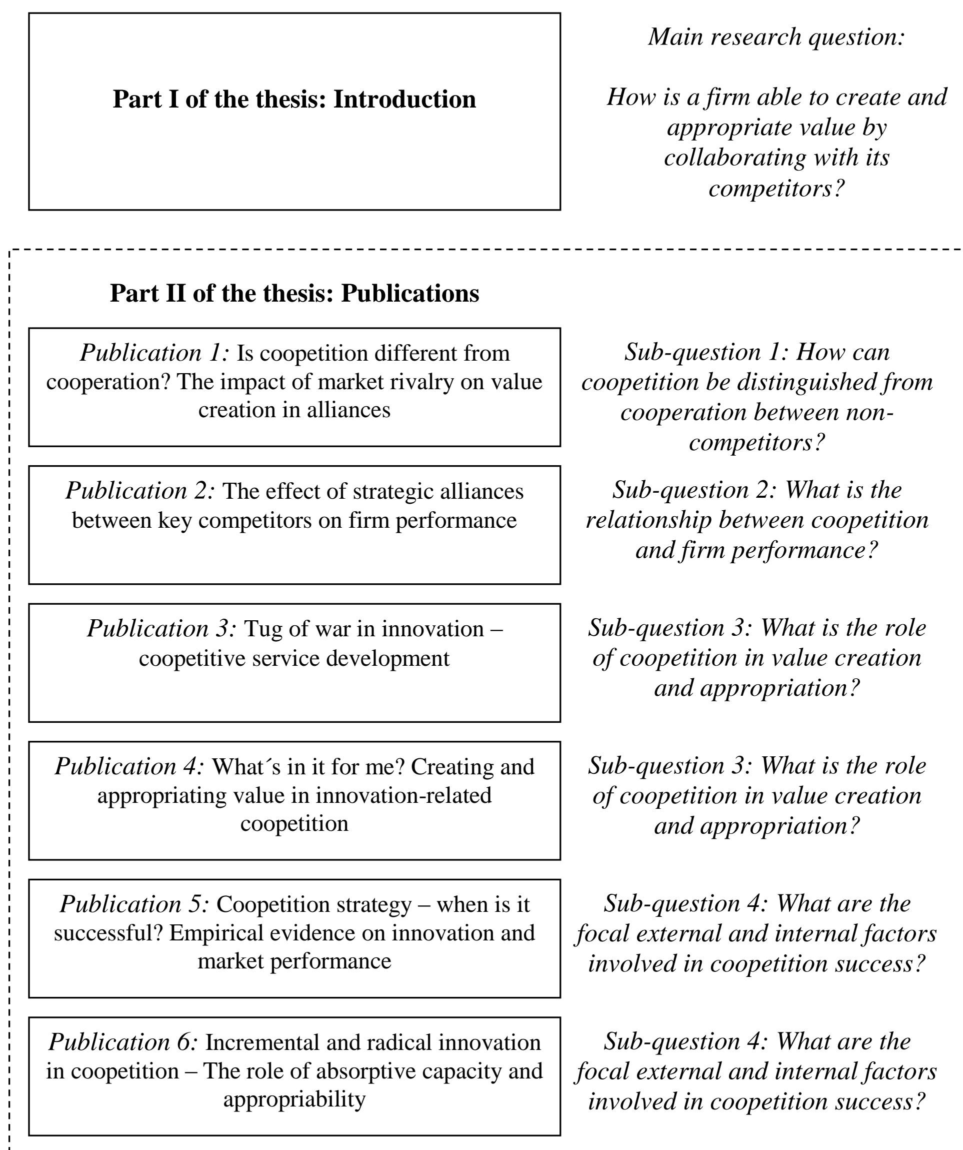

Figure 1. Outline of the study: research questions and publications

1.4. Definitions and scope

Coopetition as a concept was coined by Ray Noorda, CEO of Novell, to describe the drivers of collaborative interdependence between competing firms in the IT and software industries. Brandenburger and Nalebuff (1995, 1996) introduced the term into the academic literature, and the concept has since been used in several contexts including the inter-network (M'Chirgui, 2005; Peng and Bourne, 2009), the inter-organizational (Bengtsson and Kock, 2000; Luo et al., 2007), and the intra-organizational (Luo et al., 2006; Tsai, 2002). The focus in this thesis is explicitly on the inter-organizational level.

Coopetition is defined here as *a collaborative relationship between two or more independent economic actors simultaneously engaged in product-market competition*. There are several key issues in this definition that have implications for the scope of this thesis. Firstly, a *collaborative relationship* is any kind of relationship between two or more actors in which there is some level of goal congruence and interdependence. This suggests that the potential for collective value creation is a driver of coopetition. The term (strategic) alliance is often used in the strategy literature as a broad conceptual umbrella for many kinds of inter-organizational agreements, ranging from short-term contracts to equity joint ventures (Contractor and Lorange, 2002). The collaborative relationships examined in this study often refer to some type of alliance and the term is thus broadly utilized in the publications. The collaboration occurs through more or less formal structures, including forums or industry-level development projects, as well as more concrete agreements between firms such as joint ventures. The existence of a collaborative relationship between actors is taken as a starting point for the analysis, regardless of the specific governance structure. Secondly, the term *independent economic actors* implies that even though a collaborative relationship exists between the parties involved, they still retain their independence in terms of decision-making in competitive markets. Consequently, the analysis in this thesis concerns the individual firm's competitive strategy, and the role of coopetition in it. Such a distinction reflects earlier studies on the subject recognizing the strategic autonomy of firms involved in coopetition (Dussauge and Garrette, 1998). Thirdly, *product-market competition* is considered the distinctive determinant of coopetition in this thesis. This means that firms in coopetition overlap in their correspondence to market needs (for more discussion on thus

defining competitors, see Peteraf and Bergen, 2003). There may also be factor market competition between the competing parties, but this is not as straightforward. Indeed, even though some firms might also compete in strategic factor markets they are not necessarily competitors in product markets, and vice versa (Markman et al., 2009). Thus, coopetition in this thesis refers to relationships involving firms that are competitors in end-product markets, whose competitive activities may decrease the value-appropriation potential of their competitors due to the substitutive effect of their products (for more discussion on this issue, see Brandenburger and Nalebuff, 1996). Many authors in the field take a similar approach in defining coopetition through end-product market overlap (see, for example, Bengtsson and Kock, 2000; Garraffo and Rocco, 2009; Luo et al., 2007). Finally, it is important to stress the word *simultaneously* in that coopetition involves both types of interactions at the same time: collaborative and competitive.

The main research question addressed in the study focuses on value creation and value appropriation. These are key concepts and are used throughout this Introduction as well as in the individual publications in order to shed light on the distinguishing features of coopetition. It has been suggested that analysis of the individual firm's competitive advantage in inter-organizational collaboration requires an understanding of both mechanisms (Lavie, 2007; MacDonald and Ryall, 2004). Furthermore, in the inter-organizational context value creation is a fundamentally collective activity, whereas value appropriation is an individual, firm-specific activity (Khanna et al., 1998; Oliver, 2004). *Value* is seen here as an outcome of a specific firm activity connected with distinct types of economic or other benefits for one or several of the stakeholders. It is inherently connected with customers' perceptions of the firm's outputs, and in the business context it is eventually realized through monetary exchange leading to revenues and profits for the producer of the value (Bowman and Ambrosini, 2000). Thus, from a firm's perspective *value creation* could be seen as either an increase in customers' willingness to pay for certain outputs, or as a decrease in the costs of producing them (Brandenburger and Stuart, 1996; Sirmon et al., 2007). Either of these outcomes of value creation may materialize as a result of coopetition, when competing firms collaborate to create value in the form of improved, new, or more efficient solutions, for example. *Value appropriation*, on the other hand, refers to the individual share that the firm can capture from the created value. The simultaneous application of these two concepts is at the heart of the seminal definition of coopetition (Brandenburger and

Nalebuff, 1996), according to which competitors collaborate in order to create a bigger business "pie" (i.e. to create value), while competing to divide it up (i.e. to appropriate value).

The level of analysis in the study is the individual firm and its competitiveness, in other words the firm-specific *coopetition strategy*. Coopetition strategy is defined here as a *firm-specific strategy pursuing competitiveness through collaboration (and competition) with competitors.* The main focus is therefore on the firm-internal and firm-external factors affecting the performance implications of coopetition on the level of the individual firm. Firm performance is approached from two perspectives: *market performance* and *innovation performance*. Former relates to the firm's performance in the markets it is operating in terms of growth and profits (Delaney and Huselid, 1996), while the latter relates to the firm's performance in introducing improved and new products, services and processes (Alegre et al., 2006; Laursen and Salter, 2006). This focus differentiates the study from those focusing more or less on the alliance level in determining the success factors involved in the management of a specific alliance in terms of type and scope (McGill, 2007; Oxley and Sampson, 2004), contractual and relational governance (Morris et al., 2007), or relationship length and dissolution (Dussauge et al., 2000; Park and Russo, 1996). In adopting a firm-specific perspective this thesis focuses more on the structure and management of the whole relationship portfolio, and on the inclusion of coopetition in it as a conscious strategic choice. Studies suggesting that individual alliances do not necessarily contribute as much to firm-level performance as the whole relationship portfolio does (de Man and Duysters, 2005) support this perspective. The adopted scope influences the choice of theories used in the thesis. The theoretical background is discussed in the following chapter.

2. THEORETICAL BACKGROUND

This study is based on three core theories: 1) game theory, 2) the resource-based view, and 3) transaction cost economics. The objectives and the scope of the study motivated this choice of theoretical streams, all of which support investigation of the main research question as well as of the sub-questions. The main rationale in choosing the theories is the focus on coopetition as a firm-specific strategy, and the issues related to such strategy in an individual firm level. In particular, the chosen theories facilitate understanding of the rationale behind coopetition (game theory), the premises for creating and appropriating value in coopetition (the resource-based view), and the inherent risks (transaction cost economics). Furthermore, their utilization in combination in order to analyze firm-level success in coopetition is in line with earlier research addressing similar types of questions (see, for example, Quintana-García and Benavides-Velasco, 2004). For instance, the transaction-cost approach has been used in many studies on coopetition in supporting other theories. Williamson (1985, 18) endorses such a strategy in suggesting that transaction cost economics should be combined with alternative approaches when possible. This is widely acknowledged in that coopetition scholars have integrated it into many different approaches, including the resource-based view (Quintana-García and Benavides-Velasco, 2004), the knowledge-based view (Heiman and Nickerson, 2004), and game theory (Quintana-García and Benavides-Velasco, 2004). In terms of this thesis, game theory, the resource-based view and transaction cost economics were used in order to incorporate the relevant viewpoints and thereby grasp the complex subject at hand.

Focusing explicitly on these three theories may entail the exclusion of some potentially applicable theories. For instance, the business network approach (Håkansson, 1982; Ritter and Gemünden, 2003; Turnbull et al., 1996) examines business relationships between organizations especially from the interaction and relational perspectives. Work in this field also includes research focused specifically on coopetition (Bengtsson and Kock, 1999, 2000; Easton and Araujo, 1992), and is useful in analyzing collaborative interactions and related emergent strategies. However, it is not singled out in the theoretical background of the present study because the scope of this thesis lies in firm-level coopetition strategies and competitiveness,

which can be coherently addressed through the three aforementioned theories (game theory, the resource-based view of the firm, and transaction cost economics). In addition, from the perspective of this thesis the most important foundational elements and assumptions (shared with the business network approach) in terms of the collaborative elements of coopetition also come from game theory (Axelrod, 1984) and the resource-based view of the firm (e.g., Das and Teng, 2000b; Grant and Baden-Fuller, 2004).

The individual contributions of the theories adopted are discussed in the following sections, and the chapter ends with a synthesis of the theoretical implications.

2.1. Theoretical approaches to coopetition

2.1.1. Game theory

Game theory has been popular in the literature on economics as an intellectual framework within which to analyze competitive interactions between individual profit-maximizing entities. Whereas the early studies focused mainly on zero-sum games, recent developments place more and more emphasis on cooperation and longer-term relationships (Axelrod, 1984). In terms of firm strategy, game theory is about the firm's strategic choices, the success of which depends on the choices of other players in the "game" (Brandenburger and Nalebuff, 1996; Saloner, 1991). According to Grant (2002), the theory makes two valuable contributions to strategic management. First, it allows the framing of strategic decisions in terms of identifying the players, specifying each player's available options and the payoffs from every combination of options, and sequencing the decisions using game scenarios. Secondly, it can predict the outcomes of competitive situations and allows optimal strategic choices. One of its biggest benefits is in viewing business interactions simultaneously from both a competitive and a cooperative perspective (Brandenburger and Nalebuff, 1996; Grant, 2002). The key contribution of game theory in terms of coopetition is its approach to the distribution of the "economic pie" among firms in competitive and cooperative relationships. Accordingly, coopetition is deemed rational when cooperating with a competitor increases the size of the market so that there is more to

allocate among the participants than there would be otherwise (Brandenburger and Nalebuff, 1996).

In general, game theory posits that each player tries to capture the biggest possible part of the economic pie and at the same time to avoid the costs involved. Having assessed these issues the players choose with whom they will cooperate and compete (Lado et al., 1997). When, following this assessment, a competitor is identified as an optimal partner the decision can be made rationally. Such an analysis differs from the classic perception of industry competition according to which competitors concentrate on strictly competing against each other (Porter, 1980, 1985). For example, Brandenburger and Nalebuff (1996) suggest that sometimes it is best to let others (competitors) win and sometimes it is not – the most important thing is to win yourself. Several studies take the game-theoretic approach to coopetition (Brandenburger and Nalebuff, 1995, 1996; Loebbecke et al., 1998; Wegberg, 2004), and some have synthesized game theory with other views (e.g., Lado et al., 1997).

In particular, the comparison of two types of coordination games – the classic prisoner's dilemma and the stag hunt, illustrate the strategic choices related to coopetition from a game-theoretic perspective (for a comprehensive discussion, see Skyrms, 2004). The prisoner's dilemma proposes a scenario in which cooperation (being silent) between two prisoners is a choice that produces less value for the individual prisoner than competition (defection) in the case of the other prisoner's remaining silent. This scenario is possible because individual rationality allows the first prisoner to defect (when the other player remains silent) and thereby to gain a shorter sentence. In the context of inter-organizational strategy the prisoner's dilemma implies that, from the point of view of an individual firm, it is more tempting to pursue markets alone than in cooperation because the potential payoff is bigger. Such scenarios are undoubtedly very common in many markets, especially in cases in which a firm is able to develop the offering independently without the help of its competitors, keeping the whole "pie" to itself. However, fierce head-to-head competition might create a situation in which firms are, in the end, worse off than they would have been if they had cooperated with at least some of their competitors. In these circumstances game theory provides a different and more applicable scenario: the stag hunt (Skyrms, 2004). In this game collaboration among an increasing number of hunters makes it

possible to track down a deer, whereas individual competition only allows the catching of the less valuable hare. Thus, cooperation leads to a bigger payoff than competition from the perspective of all players in all situations. In the context of coopetition the stag hunt depicts a scenario in which the economic value is greater when firms collaborate, which leads to the possibility of eventually appropriating more by competing. For example, creating new products and services or improving current ones in collaboration with competitors may increase the size of the current market or create a completely new one. This leaves the collaborating competitors better off than if they had not been collaborating.

However, in collaboration between independent economic actors the division of value is, in the end, a matter of individual competition. In this sense coopetition resembles a "positive-but-variable-sum game", according to which there remains *ex ante* uncertainty of the outcome even though it would be fundamentally positive for all players (Dagnino and Padula, 2002). This means that additional analyses are needed in order to assess the outcomes of the whole coopetition game. Therefore, although game theory is able to provide the rationale behind value-creation and appropriation potential in coopetition, there is a need for other theories that provide more in-depth explanations of the success factors, benefits, and downsides. The resource-based view and transaction cost economics are helpful in this respect. They are discussed in the next two sections.

2.1.2. Resource-based view of the firm

The resource-based view of the firm rests on the premise that (sustained) differences in firms' profits are based on heterogeneity in terms of resources and capabilities, which are the primary determinants of firms' strategy (Barney, 1986, 1991; Nelson and Winter, 1982; Penrose, 1959; Teece et al., 1997; Wernerfelt, 1984). Resources are assumed to give a firm competitive advantage over its rivals if they are valuable, rare, and inimitable. They comprise different types of tangible and intangible assets, ranging from raw materials to the skills and cognition of key employees as well as firm-level competences (Barney, 1991; Teece et al., 1997). The mere possession of such resources is not enough, however (Priem and Butler, 2001). The ability of a

firm to manage its resource base in a manner that creates value for its customers eventually dictates its potential to gain competitive advantage (Sirmon et al., 2007). In addition, the value of a resource is connected with its applicability in the product markets, which implies that certain types of resources are more useful than others in providing customer value (Peteraf and Bergen, 2003). In today's markets, valuable, rare, and hard-to-imitate resources in particular are typically knowledge-based, residing in the skills of individual people as well as in the routines within and between firms (Cyert et al., 1993; Grant, 1996; Nelson and Winter, 1982; Teece, 1998).

The resource-based view is extensively utilized in current strategy research. It has given rise to several specific sub-branches or developments, including the knowledge-based view (Grant, 1996; Kogut and Zander, 1992; Spender, 1996) and the dynamic capabilities view (Eisenhardt and Martin, 2000; Teece et al., 1997; Winter, 2003). The resource-based view is seen in this thesis as a theoretical umbrella, incorporating knowledge and capability elements. This is in line with research suggesting intellectual linkages among the different strands of the competence and resource-based perspectives (Acedo et al., 2006; Conner and Prahalad, 1996), and with resource-based approaches incorporating both resource and capability considerations (Helfat and Peteraf, 2003; Peteraf and Bergen, 2003).

The main contribution of the resource-based view to this study are twofold: it enhances understanding of 1) the value-creating rationale in coopetition in terms of supplementary and complementary resources exchanged and integrated among collaborating firms (Das and Teng, 2000b; Grant and Baden-Fuller, 2004), and 2) the importance of heterogeneous resources and capabilities in explaining the firm-specific performance differences in value appropriation (Barney, 1991; Teece et al., 1997).

First, with regard to inter-organizational collaboration in general, the resource-based view provides rationale in terms of efficiency and effectiveness in resource and capability utilization. Given that production typically requires the application of different types of specialized knowledge and resources, and that the knowledge required to make and develop complicated products or services does not always reside inside an individual organization, inter-organizational collaboration is often a cost-efficient solution in terms of organizing production (Grant, 1996;

Grant and Baden-Fuller, 2004). This suggests that firms need to reach outside their boundaries in order to access and acquire the necessary complementary and supplementary resources and capabilities (Das and Teng, 2000b; Grant and Baden-Fuller, 2004; Gulati et al., 2000).

Coopetition, as a specific type of relationship, includes distinctive features from the perspective of the resource-based view due to the similarity in the resource bases of rival firms, which is frequently used as a factor in defining direct or close competitors (Chen, 1996; Garraffo and Rocco, 2009; Peteraf and Bergen, 2003). Given that competitors possess similar dominant logic and market understanding (acquired through the competitive process in certain markets), it is easier for them to collaborate on many issues and to acquire and integrate knowledge (and other resources) very effectively (Dussauge et al., 2000; Knudsen, 2007; Tether, 2002). Moreover, it reflects the possession of similar resources (such as knowledge, skills and capabilities). Indeed, similar basic and background knowledge is considered a prerequisite for the ability to learn and commercialize firm-external knowledge in the discussion related to *absorptive capacity* (Cohen and Levinthal, 1990; Lane and Lubatkin, 1998). In addition to increasing the effectiveness of knowledge exchange, similarity in resources between competitors helps them to achieve scale economies and to share risks (Gnyawali and Park, 2009). It has also been suggested that similarity in partners' knowledge bases, technological capabilities, and financial resources will result in a greater propensity for collaboration between competitors, especially in innovation and development activities (Emden et al., 2006; Gnyawali et al., 2008; Gnyawali and Park, 2009; Mowery et al., 1998; Tether, 2002; von Hippel, 1987). From the opposite perspective, however, it should be noted that resource similarity can also increase the risks of coopetition in making it easier for the partners to behave opportunistically due to the effective and quick acquisition and application of knowledge (Dussauge et al., 2000; Hamel, 1991; Munsch, 2009).

It should be noted that, in practice, similarity in resources between competitors is not likely to be completely overlapping. In fact, close competitors can often be identified through *market needs correspondence* (Peteraf and Bergen, 2003), a concept suggesting that competitors overlap and substitute each other in serving the same distinct customer needs, regardless of the resources used in doing this. When the resources used to fulfill the same customer needs are dissimilar, coopetition increases the possibility to exchange and integrate complementary resources and

capabilities. Thus, firms in coopetition have the potential to utilize both similar and complementary resources, depending on their resource profiles. It could be also suggested that possessing a certain amount of similar resources helps competitors to access and acquire available complementary resources more effectively. It thus seems that coopetition embodies a unique value-creation logic that is connected to distinctive resource alignment in a relationship consisting of simultaneously competitive and collaborative elements.

Second, the resource-based view provides feasible tools for analyzing firm-specific differences in competitiveness. Even though it is possible to create value by bundling complementary and supplementary resources in collaboration between partners (Das and Teng, 2000b; Dyer and Singh, 1998), firm-specific resources and capabilities eventually dictate its realization or appropriation in the markets. Thus, some firms are able to differentiate themselves from others that have been involved in the process of creating the value. In terms of coopetition, such capabilities are often related to the protection of innovations and core knowledge, and to the possibility to efficiently acquire and apply knowledge related to the collaboration (Cassiman and Veugelers, 1998; Hamel, 1991; Knudsen, 2007). First, the importance of knowledge-protection capabilities is evident in that competitors are generally perceived as the most risky partner type, and the greatest risks are connected to losing proprietary knowledge to competitors (Baughn et al., 1997; Bosch-Sijtsema and Postma, 2009; Cassiman et al., 2009; Nieto and Santamaria, 2007). Paradoxically, the knowledge that is shared in the course of collaboration can be used in both cooperation and competition, which makes its role problematic in strategy formulation (Baumard, 2009; Bengtsson and Kock, 2000; Bresser, 1988). In fact, collaboration with a competitor may make the rival firm even more competitive (Perks and Easton, 2000). All this suggests that the mechanisms for protecting core knowledge and innovations are especially relevant in collaboration between competitors (Knudsen, 2007). The research stream focusing on the appropriability regime of a firm (the combination of different protection mechanisms) contributes to this discussion (Hurmelinna-Laukkanen and Puumalainen, 2007; Teece, 1986). Secondly, the research on absorptive capacity suggests that there are firm-specific differences in how well the firm is able to acquire and utilize knowledge from outside sources (Cohen and Levinthal, 1990; Zahra and George, 2002). In general, competing firms have relatively strong absorptive capacity with respect to each other in that they posses sufficiently similar background knowledge and

understanding gathered from the competitive process (Dussauge et al., 2000; Lane and Lubatkin, 1998; Tether, 2002). However, there are still individual differences that differentiate them in terms of the capability to acquire and apply relevant knowledge. Combined, these two capabilities (absorptive capacity and appropriability regime) give an insight into how well the firm is able to create new value through collaborating with its competitors while at the same time remaining competitive in individual value appropriation.

In sum, according to the resource-based view, coopetition incorporates distinct value-creation logic in that there is a certain overlap in resources and capabilities due to the competitive positioning between the firms. This overlap helps in collaboration and knowledge sharing, and also in the learning and utilization of complementary knowledge between firms, especially in cases in which the overlap in specialized knowledge is not too extensive (Sampson, 2004). With regard to determining the distinctive features of coopetition in value appropriation, it is suggested that firm-specific capabilities in acquiring and protecting knowledge affect the firm's ability to reap competitive benefits from the relationship. However, coopetition carries specific risks, which may reduce the possibility to create and appropriate value. These risks are discussed in the next section in the context of transaction cost economics.

2.1.3. Transaction cost economics

The seminal authors writing on transaction cost economics (Coase, 1937; Williamsson, 1985) suggest that the two main governance modes through which to practice economic activity are markets and hierarchies. The basic rationale behind transaction cost economics is that firms have to choose the governance mode that minimizes their sum production and transaction costs, i.e. to choose the most economical boundaries or scope for the firm. *Ex ante* (before contract) transaction costs refer to the realized costs of drafting, negotiating, running and safeguarding an agreement or contract, whereas *ex post* (after contract) costs include the costs associated with the misalignment of party interests with respect to the contract. The determinants that give rise to these transaction costs are a) bounded rationality, b) opportunism, c) asset specificity, d) uncertainty, and e) frequency of transactions. When the transaction costs in a given activity are

high, the firm should utilize its internal organization to minimize them. On the other hand, when transaction costs are low it should buy the desired products and services from the markets.

Collaborative arrangements between firms can also be explained from a transaction-cost perspective. Collaborative relationships (e.g., alliances and joint ventures) are perceived as hybrid structures between markets and hierarchies, which could be considered a form of governance that shares some of the attributes of both markets and the use of internal organization, the idea being to avoid or weaken the hazards of each (Park and Russo, 1996). In many cases either choice is suboptimal from the firm's perspective. For one thing, the internal organization is often inefficient and costly in handling the economies of scale and scope required in many types of production (Kogut, 1988). Secondly, buying inputs though market transactions is often not the preferred option either because many types of modern production require more or less tacit knowledge, which is extremely inefficient to transfer through markets (Hennart, 1988; Park and Russo, 1996). Thus, different types of collaborative agreements are favored when transactions are frequent, the firms are dependent on other firms' inputs, and there is the possibility to share risks and knowledge (Blomqvist et al., 2002).

From the perspective of transaction cost economics, coopetition could be seen as a hybrid governance form between markets and hierarchies. With regard to the distinctive features of coopetition, transaction cost economics predicts additional hazards compared to collaboration between non-competing firms: because of the competition in the end-product markets the collaborating firms have a natural incentive to act opportunistically. Opportunism could be defined as "self-interest seeking with guile" (Williamsson, 1975), which means that the opportunistic party acts self-interestingly and may cause damage to other parties in so doing. In the case of alliances in general, it is suggested that the risk of losing proprietary or otherwise important knowledge in the course of collaboration may overshadow the possible benefits (Heiman and Nickerson, 2004). In terms of coopetition, Tidström (2009) suggests in her empirical study that firms indeed act individualistically in their collaboration with competitors, and this happens because of the competitive history between the actors. Thus, the resulting goal conflicts and the fear of losing proprietary knowledge increase when partners are competitors (Park and Russo, 1996). In fact, the main downside of coopetition from the transaction cost

perspective is the spillover of key knowledge and technologies to the competitor (Cassiman et al., 2009; Nieto and Santamaria, 2007; Quintana-García and Benavides-Velasco, 2004). Furthermore, as discussed in connection with the resource-based view, competing firms are especially adept at acquiring knowledge from the collaborative relationship given their pre-existing background knowledge and understanding. Indeed, transfer of knowledge about sensitive business issues is very likely to take place, at least to a some extent, when direct competitors collaborate (Munsch, 2009).

Thus, transaction cost economics predicts a higher failure rate when cooperating firms are direct competitors than when there is no competitive element. Park and Russo's (1996) empirical study building on the transaction-cost perspective supports this conclusion in showing that the competition element predicted a higher failure rate. Later, Kim and Parkhe (2009) found similar results. In sum, it seems that the hazards resulting from the competitive alignment between collaborating partners has negative implications for alliance-level success, *ceteris paribus*, according to transaction-cost rationale. In order to understand the success factors of coopetition from a firm perspective, however, it would be useful to explore the phenomenon through several theoretical lenses. A synthesis of the three theoretical perspectives is thus provided in the next section. Table 1 summarizes the three theoretical approaches to coopetition used in this study.

Table 1. Theoretical approaches to coopetition

	Game theory (GT)	*Resource-based view of the firm (RBV)*	*Transaction cost economics (TCE)*
Key authors	Axelrod, 1984 Brandenburger and Nalebuff, 1996	Penrose, 1959 Wernerfelt, 1984 Barney, 1991 Teece, 1997	Coase, 1937 Williamson, 1975, 1985
Main tenets	Firms' strategic competitive decisions are made by assessing other players' actions and reactions	A firm's heterogeneous resources and capabilities determine its comparative performance (competitive advantage)	The amount of transaction costs determines the choice of firm boundaries. The main governance modes are markets, hierarchies and hybrid arrangements.
Main implications for coopetition research	Competing firms collaborate to mutually create value, and compete on individual value appropriation. The rationale for coopetition can be attributed to the existence of a potentially "positive-sum game" between the players.	Competing firms integrate similar as well as complementary resources and capabilities in order to create unique synergies. Similarity in resources and capabilities among competitors help them effectively to acquire, utilize, and integrate knowledge in coopetition.	The motives, potential and capability of opportunistic behavior imply extra transaction costs for coopetition when compared to collaboration between non-competitors.
Performance / success implications for the firm's coopetition strategy	Collaboration in value creation may be more effective in increasing the size of the business "pie" than individual players acting separately. Individual value-appropriation activities eventually determine the share of the value that the firm captures.	Firm-specific resources and capabilities affect the success of a coopetition strategy from the firm's perspective.	Coopetition, compared to collaboration between non-competing firms, involves additional transaction costs. Thus, when other factors are constant, coopetition is an inferior option to collaboration with non-competitor stakeholders.

2.2. Theoretical approaches to coopetition – A synthesis

Not only do the individual theories contribute to enhancing understanding of coopetition, they are also helpful in combination. The theoretical approaches described in the previous section are synthesized here in terms of two broad issues: 1) the overall rationale of coopetition and 2) the success potential of a coopetition strategy from the firm's perspective. The first of these concerns the potential to create value beyond other available options, and the second considers the success potential of coopetition from the perspective of the individual firm's value appropriation. Taken together these two perspectives capture the logic of coopetition – mutual value creation and individual value appropriation.

Rationale for coopetition

Overall, the three theories provide a basis on which to assess whether or not coopetition is a rational strategy for an individual firm. The game-theoretic assessment is that competitors collaborate in order to create more economic value, whereas they compete to divide it up. If the benefits associated with inter-competitor collaboration (value creation) are larger than those connected with head-to-head competition from the firm's viewpoint, then the collaboration is strategically justified. Further, when considering the rationale behind coopetition the firm needs to understand the possibility of opportunistic behavior and the related negative implications, and to weigh them against the potential benefits. Insights gleaned from the resource-based view and transaction-cost economics are helpful in assessing these issues.

On the negative side, it is acknowledged that firms in coopetition might act opportunistically in terms of acquiring core knowledge from each other and utilizing it for their own advantage. Hamel's (1991) widely cited view is that collaboration between competitors often leads to a "learning race" in which firms compete over who can acquire more knowledge from the relationship before its termination. Such a setting implies a negative-sum game between the collaborating partners. Although such a scenario is obviously possible, and there is some empirical evidence backing it up (Park and Russo, 1996), there is even more evidence suggesting otherwise.

The distinctive positive benefits of coopetition can be attributed to two main issues, both of which relate to the possession of overlapping knowledge and resources among competing firms: 1) increased relative absorptive capacity and 2) a stronger motive and ability to engage in collaboration that creates value in a specific industry. First, the possession of common knowledge, language and processes in a specific domain is a prerequisite for successful knowledge integration and the capability to utilize such knowledge in the markets (Cohen and Levinthal, 1990; Grant and Baden-Fuller, 2004; Inkpen, 2000). When firms continuously confront similar problem sets in their end-product markets and utilize similar types of resources in addressing them they are likely to possess similar market and technological knowledge. Such a basis exists among competing firms operating in the same industry, and this significantly increases the value-creation possibilities given the higher relative absorptive capacity between competitors than in the case of non-competitors (Dussauge et al., 2000; Lane and Lubatkin, 1998). Second, as competing firms are operating in the same industry by definition, they have an interest in sharing risks and costs, as well as in utilizing positive network externalities connected with the development of interoperable technologies and services - activities in which competing firms are naturally positioned to participate (Fjelstad et al., 2004; Gueguen, 2009; Mione, 2009; Spiegel, 2005). Furthermore, sharing knowledge on issues that are relevant for the development and efficiency of the whole industry (or a group of firms within the industry) does not significantly increase the risk of unwanted knowledge spillovers, but rather increases the likelihood of deriving common benefits (Choi et al., 2010; von Hippel, 1987).

All in all, these issues motivate competitors to bundle capabilities and coordinate activities in the development of current as well as new markets and technologies. In many cases they promote the perception of coopetition as a positive-sum game for all involved. From this perspective, coopetition creates so much value that the potential individual shares for all of the different actors are larger than they would be without it. This has been shown in many empirical settings in which the development of new technologies has been executed through coopetition, resulting in a new market in which there is more to compete over than would be the case without such activity (Fjelstad et al., 2004; Gueguen, 2009; Mione, 2009; Spiegel, 2005; von Hippel, 1987). Furthermore, firms have benefited from coopetition in attaining scale and scope benefits through

allying in production and distribution (Garrette et al., 2009; Oum et al., 2004; Segrestin, 2005). Thus, when the benefits outweigh the possible drawbacks the individual players have a rational reason to collaborate. The relative share of the value that a certain player is eventually able to appropriate, however, is determined though the capabilities and actions of individual actors. This side of coopetition is discussed in the next section.

The success potential of a firm's coopetition strategy

According to game theory and the resource-based perspective, the value-appropriation potential of a firm in coopetition is determined by the actions, capabilities, and the environment of the individual firm, even though the value is created mutually (Brandenburger and Nalebuff, 1996; Lavie, 2007; Oliver, 2004). This means that the success potential of the firm's coopetition strategy is realized first and foremost through collective value creation among the firm and its coopetition partners, but the division of the economic value thus created must be contested individually.

As mentioned above, coopetition could be considered a potential positive-sum game for all of the involved parties. There are several reasons why the positive-sum setting also holds in the value-appropriation phase. First, not all competing firms perceive the value they want to appropriate in a similar way (Brandenburger and Nalebuff, 1996), which means that coopetition might bring additional value to participants who can differentiate their goals. For example, collaboration between competing firms in the automotive industry has resulted in the development of common platforms for similar-sized cars, but they are branded differently, focusing on different customer and geographical niches. Thus, firms that can create their own differentiated offering based on collaboratively created value are in the best position to appropriate large portions of that value. Furthermore, the more capable they are in protecting the differentiated share of the value they pursue to appropriate, the more likely they are to succeed in that task. Second, firms involved in coopetition can ally with each other to confront other rivals in the same industry. Thus they can all appropriate a larger portion of the value that is available on the industry level, and still reach positive-sum outcomes for all of the participants in coopetition. In fact, it has been noted that the level of competition is increasingly shifting to network-against-network competition, with

constellations including different groups of competitors competing against each other for technological, geographical, or other strategic reasons (Choi et al., 2010; Duysters et al., 1999; Möller and Rajala, 2007).

However, some of the value will eventually be divided under zero-sum conditions, when firms associated with coopetition compete head-to-head for the created value. The more similar the firms' offerings are in the end-product markets, the higher the proportion of the value that is contested under these conditions. Even though firms involved in coopetition have the same potential to appropriate a portion of the created value in principle, the reality is that some are able to reap more benefits than others. To the extent that the firms are competing for a relative share in the very same market (zero-sum game), the value-appropriation potential is connected with their capabilities in utilizing the results of coopetition there. In this, the distinctive features of successful firms in coopetition are related to the simultaneous protection of core knowledge and the acquisition and application of relevant knowledge (Cassiman and Veugelers, 1998; Hamel, 1991; Knudsen, 2007). Although this suggestion applies to all types of collaboration to some extent (Heiman and Nickerson, 2004; Jensen and Webster, 2009), it is highlighted in coopetition when the results of the collaboration are appropriated in the same markets, which is not the case in vertical collaboration between buyers and suppliers, for instance. Secondly, in terms of the firm-level alliance strategy as a whole, coopetition may be more or less successful as a part of it. It is suggested in the literature that there are possible benefits as well as drawbacks in simultaneously adopting competitive and collective strategies with the same players (Bresser, 1988; Lado et al., 1997). Thus, firms adopting the optimal strategy in terms of who to compete with and who to collaborate with may be able to utilize coopetition so as to give them competitive advantage over their rivals. Nokia, for example, has adopted the strategy of collaborating with some of its competitors in innovation activities while competing against other coalitions (Dittrich and Duysters, 2007). In fact, it appears from research on the constitution of R&D partner portfolios and information sources that including competitors among other types of partners is beneficial (Belderbos et al., 2004b; Faems et al., 2009).

In sum, firm-specific performance differences in coopetition are related to its optimal utilization as a part of the corporate strategy, the business environment in which the firm operates, and the capabilities the firm possesses.

2.3. Conceptual framework of the thesis

Even though the theories described in the previous sections explain the rationale as well as the performance implications for coopetition, earlier empirical research has produced mixed evidence of individual firm's success. This ambiguity could be attributed to the fact that earlier research has examined coopetition only though the lenses of a single theory, and has not taken into account both firm-internal and firm-external factors affecting coopetition success. Furthermore, earlier studies have often focused on single case studies or individual alliances between competitors rather than on the premises of firm performance when a coopetition strategy is applied. These issues provide the motivation to formulate the conceptual framework of this study.

In order to understand what kind of firms can reap benefits from coopetition and when they are able to do so, the conceptual framework of this thesis is based on both internal, firm-level factors and external, industry-level factors (Gnyawali and Park, 2009, recently acknowledged the importance of focusing on both of these levels in understanding the motives and benefits of a coopetition strategy). These factors form the basis for the explanatory measures used in the empirical publications, as well as for the conceptual discussion on these issues in the theoretical papers.

The distinctive firm-level factors are connected to the utilization of coopetition as part of the corporate strategy. This means that there are differences between firms in the extent to which they engage in collaboration with their competitors – for some more extensive collaboration may produce better results than for others. Furthermore, emphasis is placed on firm-level capabilities in acquiring and applying knowledge, as well as in protecting it because of the distinctive nature of overlapping basic knowledge between competing firms. The distinctive external factors favoring coopetition are also connected with the competitive positioning between the parties.

Factors in business environments in which coopetition might have distinctive performance implications are thus examined both theoretically and empirically. Firm-level success in coopetition attributable to firm-internal and firm-external factors is analyzed on the basis of various performance measures concerning both innovation and market performance. Both types of performance are measured in order to understand a broad array of possible implications, given that earlier literature has established that coopetition has an effect on both innovative and other types of performance. Figure 2 sketches the simple conceptual framework of this study.

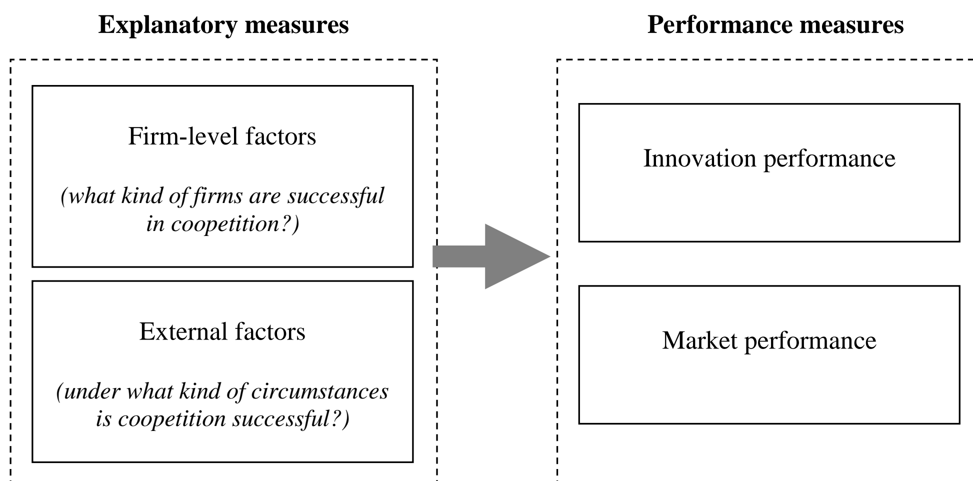

Figure 2. The conceptual framework of the study

3. METHODOLOGY AND RESEARCH DESIGN

This study comprises six separate publications, each focusing on different issues concerning the subject under scrutiny. Table 2 summarizes the research design of the study in terms of roles, methods and analysis, and the data used in the publications.

Table 2. Research design

Publication	***Role***	***Method and analysis***	***Data***
1. Is coopetition different from cooperation? The impact of market rivalry on value creation in alliances	Exploring the distinctive factors of coopetition with respect to collaboration between non-competitors.	Literature review and conceptual development	Existing theoretical and empirical research on coopetition
2. The effect of strategic alliances between key competitors on firm performance	Measuring the effect of coopetition on firm performance in the global ICT sector	Quantitative Linear regression analysis	Sample of 56 firms. Data gathered from annual reports and the SDC Platinum database.
3. Tug of war in innovation – coopetitive service development	Exploring the distinctive factors of coopetition through a qualitative case study on Finnish Mobile TV development	Qualitative case study Content analysis	Interview data gathered from 12 Finnish organizations in 14 semi-structured interviews
4. What´s in it for me? Creating and appropriating value in innovation-related coopetition	Exploring the distinctive factors of value creation and appropriation in innovation-related coopetition	Literature review and conceptual development	Existing theoretical and empirical research on coopetition and innovation
5. Coopetition strategy – when is it successful? Empirical evidence on innovation and market performance	Measuring the relationship between coopetition and firm performance under different environmental contingencies	Quantitative Linear regression analysis	Sample of 213 firms obtained from a cross-sectional survey of Finnish markets
6. Incremental and radical innovation in coopetition – The role of absorptive capacity and appropriability.	Measuring the effect of absorptive capacity and the appropriability regime on incremental and radical innovation in coopetition	Quantitative MANCOVA (multivariate analysis of covariance) and multiple multivariate regression analysis	Sample of 138 firms obtained from a cross-sectional survey of Finnish markets

3.1. Methodological approaches

Several different methodologies are used in addressing the research questions. The first publication is a theoretical literature review, focusing on the first sub-question concerning *how to distinguish coopetition from cooperation between non-competitors.* A simple conceptual model is developed showing the situations in which the value-creation and appropriation implications of coopetition compared to collaboration between non-competing firms differ. The second study, which is quantitative in nature, focuses on the sub-question concerning *the relationship between coopetition and firm performance*. The data comprises a sample of coopetitive relationships gathered from public sources. The results of the study offer initial guidance about the performance implications of coopetition, and thus provide a basis on which to conduct further research on the topic. The third publication reports a case study on Finnish mobile TV development, and addresses the sub-question concerning *the role of coopetition in value creation and appropriation*. The study is an empirical investigation of the distinctive features of coopetition in terms of value creation and appropriation. The fourth publication is a theoretical literature review also focusing on the same sub-question of *what is the role of coopetition in value creation and appropriation*. It was considered necessary to conduct this conceptual study to complement the other theoretical publication (publication one) and thus further explore the distinctive features of coopetition. Whereas the contribution of the first paper is in distinguishing coopetition from cooperation between non-competitors, the fourth one comprises a more in-depth conceptual examination of the explicit mechanisms related to value creation and value appropriation. The fifth publication is related to the final sub-question concerning *the focal external and internal factors involved in coopetition success*. Quantitative methodology is used in order to examine how different levels of coopetition among the firm's alliance portfolio affect its market and innovation performance under different environmental contingencies. The contribution of the publication therefore lies in identifying business environments in which coopetition is successful and in which it is not. The sixth and final publication, which addresses the same sub-question as publication five, also adopts a quantitative approach and uses the same survey data. The objective was to find out how firm-specific capabilities related to absorptive capacity (knowledge acquisition) and the appropriability regime (knowledge protection) affect performance in terms of creating incremental and radical innovations in coopetition.

The overall research project incorporates conceptual (2 articles), qualitative (1 article) and quantitative (3 articles) approaches. The guiding principle behind the adoption and utilization of these approaches was the initial interest in studying coopetition from the perspective of individual firm's strategic decision making. Thus, issues related to management of coopetition as a strategic choice having effects on various levels of firm's performance were highlighted in the research process. The empirical research design of the study incorporates methodological and data triangulation (see e.g., Yin, 2003). The decision to adopt this approach was based on the research question as well as on the complexity of the subject under study. For example, an explorative case study (qualitative methodology) may give the researcher valuable pre-understanding, which can be then examined with quantitative methodologies in order to enhance generalization of the results (Miles and Huberman, 1994). In terms of this dissertation, conducting the case study helped to enhance understanding of the research topic and in the development of the survey questionnaire that provided the quantitative data for the last two publications. Quantitative methodologies were used in testing the various hypotheses linked to the research questions. Further, the use of two different sources of quantitative data allowed exploration of the phenomena from a generic (public data) and more in-depth (survey data) perspective.

3.2. Data collection and analysis

3.2.1. Qualitative study

The qualitative study (publication 3) was conducted at an early stage of the research process in order to provide the researcher with a pre-understanding of the topic. Furthermore, given the ambiguity in earlier research in terms of the distinctive factors of coopetition, an explorative approach was deemed appropriate in order to build propositions for further investigation (Yin, 2003). In general, the case-study method is perceived as being most appropriate in the early stages of research (Eisenhardt, 1989). Thus, a single case was chosen, presented as a unique illustration of the phenomenon on which understanding was sought (Stake, 1995). The study

illustrated the historical development of the mobile TV business in Finland, which involved competing firms.

The qualitative data was gathered through interviews carried out in spring 2007. The interviewees were key informants, typically business and technology managers responsible for the mobile TV business in their firms. They were chosen on the basis of their knowledge of the topic: they were all active members of the mobile TV service-development consortia explored in this case study. The choice of key informants was made in cooperation with the project manager of Finnish Mobile TV, the aim being to make sure that all the focal actors were taken into account. At the time the interviews were conducted there were 12 organizations actively involved in the project, and at least one person per company was interviewed.

The data was collected in semi-structured interviews, and four researchers were involved in the process. The interviews focused on management challenges and paradoxes related to collaborative service innovation, and the interview guide was based on previous literature on these subjects. In particular, the themes covered the nature of collaborative service innovation, the opportunities and threats related to coopetition in service development, informal and formal networks, cooperation and competition, as well as trust and contracts. 14 people representing 12 organizations were interviewed. The interviews lasted between 30 minutes and two hours, and they were recorded and transcribed. Data was also gathered from public sources such as company and project web pages, and public newspapers and news archives in order to obtain a holistic view on the case.

The data was subjected to content analysis (Auerbach and Silverstein, 2003), which allows the identification and thematization of patterns and structures in the textual data into different subjects of interest. The analysis focused mainly on relationships between competing firms that were involved with each other through a distinct development project. The emphasis in the analysis was on the perceptions of competing firms on coopetition, in addition to the perceptions of other firms with respect to the focal issues.

Even though reliability and validity cannot be determined in the same way as in the case of quantitative research, qualitative studies can be assessed in terms of trustworthiness, rigor and quality (Golafshani, 2003). Several actions were taken in order to ensure that the analysis conducted in the study would fulfill these criteria. For instance, having multiple sources of data (i.e. data triangulation) helped in constructing a complete view of the subject and in ensuring validity through achieving convergence among the different categories and themes of the phenomena under study (Creswell and Miller, 2000). Furthermore, the interpretations of the researchers were discussed with the focal representatives of the case firms in order to ensure that the interviewees' opinions on different issues were understood correctly (i.e. member checking), and that the case-study description and analysis would reflect reality as far as possible (ibid.).

3.2.2. Quantitative studies

Two separate sets of data were gathered for the quantitative studies. The first set was acquired from public sources (publication 2), and the second was gathered via a structured survey instrument (publications 5 and 6).

The first data set was gathered from the global ICT industry for the purpose of measuring the effect of a firm's coopetition strategy (the relative amount of coopetition among firm's alliances and the relative amount of alliances with firm's competitors) on its performance. The aim in identifying the companies was to find a representative set of leading firms in the global ICT industry. This approach to sample selection is in line with procedures adopted in several previous studies on collaboration networks (Ahuja, 2000; Gulati and Garguilo, 1999) in which the largest leading firms in an particular industry comprised the data set. The standard industry classification (SIC) was used to identify the companies. The data set was collected from the Thomson Financial database, which identified companies representing six different sub-sectors within the global ICT industry. In addition, the firms' business descriptions and annual reports were used in the sub-sector classification. The inclusion criterion, given that the company operated in a specific sub-sector, was the level of annual sales in 2006. The initial sample comprised 60 companies (10

firms from each sub-sector), but some were excluded due to the lack of relevant information, and eventually a total of 56 companies were identified.

Information on both the strategic alliances and the key competitive relationships of the identified firms was collected in order to analyze their coopetition activities. First, the alliance and joint venture database SDC Platinum provided the alliance data for each of the companies, covering the period from 2004 to 2006. Secondly, information on competitive relationships was gleaned from the companies' public annual reports from 2006 (companies are obliged to list their main competitors in these reports). Thirdly, the alliance and competitor data sets were compared in order to identify the coopetitive relationships, i.e., those including both an alliance and a competitive relationship between two parties. This produced a total of 46 coopetitive relationships within the selected group of firms. On the individual firm level, a total of 36 firms had one or more coopetitive relationships. The data was quite limited in terms of sample size as it is extremely hard to find evidence of coopetition when the firms themselves identify their competitors by name. However, this approach has its benefits – the relationships examined in the study are strongly competitive and collaborative at the same time (suggesting strong "coopetitive tension"), and this was a good starting point for the analysis. The data was subjected to regression analysis, return on assets (collected from the Thompson Financial database) being used to measure the effect of coopetition on firm performance. The results derived from the data are further discussed in publication 2.

The second set of data was gathered by means of a structured survey questionnaire, and was utilized in publications 5 and 6. The qualitative study (publication 3) and the first quantitative study (publication 2) helped in developing the pre-understanding for this phase. The survey was conducted in Finland in 2008-2009 as part of the larger InnoSpring Janus research project being conducted within the Technology Business Research Center at Lappeenranta University of Technology. The initial population comprised a cross-industry sample of Finnish companies engaged in R&D, and all firms with at least 100 employees were selected into the initial sample. The Amadeus database was used to identify the companies. A total of 762 firms were identified as suitable, the inclusion criteria being that the firm was an independent business organization making its own strategic decisions (thus excluding non-independent production facilities and sub-

branches with no independent R&D strategy, for example), and had on-going R&D and innovation activity. All the eligible firms were contacted by telephone with a view to finding someone who was knowledgeable about the aforementioned issues and was willing to complete the questionnaire. In accordance with the logic of the key-informant technique (Kumar et al., 1993), most of the respondents held positions such as R&D director, development manager or technology manager, indicating their seniority and key position in the company in terms of R&D and innovation. Confidentiality with regard to the research results was emphasized, and the respondents were promised a firm-specific report as well as a general summary of the findings. Of the 762 R&D representatives, 570 were reached after several contact attempts. 455 persons agreed to participate in the survey, and 115 refused on the telephone or after they had received the questionnaire. The questionnaire was web-based, and each respondent received a personal link to it by e-mail. A maximum of five follow-up e-mails (at one-month intervals) were sent to those who had not responded at the time. Responses were received from 213 companies, representing a satisfactory effective response rate of 37.4 percent (213/570).

The ANOVA (analysis of variance) test was used to check for possible non-response bias (Armstrong and Overton, 1977). The respondents were placed in four distinct groups as follows: 1) those who responded immediately (before the first follow-up e-mail), 2) those who responded after the first follow-up, 3) those responding after the second follow-up e-mail, and 4) those responding after the third or later follow up e-mails (this was a combined category because there were only a few respondents who responded after the fourth and fifth e-mails). The groups were compared on five central definitive factors: ROCE 2007 (Return on Capital Employed, public data), sales in 2007 (public data), number of employees in 2007 (public data), market performance (scale adapted from Delaney and Huselid, 1996), and innovation performance (scale adapted from Alegre and Chiva, 2008). According to the results, there was no significant difference between the respondent groups with respect to any of these factors. Because the groups were not equal in size, Tukey’s harmonic means B test was conducted, and it was found that all the variables were homogenous between these groups. In addition, an independent samples t-test comparing only the early (response before the first follow-up) and late (three or more follow-up e-mails) respondents was conducted. The t-test and the ANOVA results were similar, suggesting no statistical difference between the groups.

The measures for the analyses were chosen with reliability and validity in mind. Cronbach's Alpha (Nunnally, 1978), which measures the extent to which the items in a scale represent the same phenomenon, was used to test the reliability of the scales (including the independent and dependent variables). Each scale used had an Alpha over .70, suggesting an acceptable level of reliability. Validity (i.e. whether or not the research truly measures what it is intended to measure) was assessed in terms of content and discriminant validity, as well as of the unidimensionality of the constructs (Hair et al., 2006). Content validity was pursued through adapting and modifying scales used in earlier research, whereas discriminant validity and unidimensionality were assessed through exploratory factor analyses of the items used in the scales. As a result of this process, several items with significant cross-loadings were left out. The scales, and their reliability and validity are discussed in more detail in the publications.

The survey data was subjected to linear regression analysis for publication 5, and for publication 6, the data was analyzed by means of MANCOVA (multivariate analysis of covariance) and multiple multivariate regression analysis using the general linear model. For publication 5, coopetition alignment (the number of alliances between competitors among all alliances) was used as an independent variable explaining the firm's market and innovation performance. Sub-group analysis (Sharma et al., 1981) was conducted, the moderating variables being market uncertainty, network externalities, and competition intensity. Publication 6 assessed the effect of firm-specific knowledge-acquisition and knowledge-protection capabilities on incremental and radical innovation outcomes in coopetition. Further discussion of the analysis and the results are to be found in the publications. Figure 3 summarizes the explanatory and performance measures used in the quantitative studies (publications 2, 5 and 6).

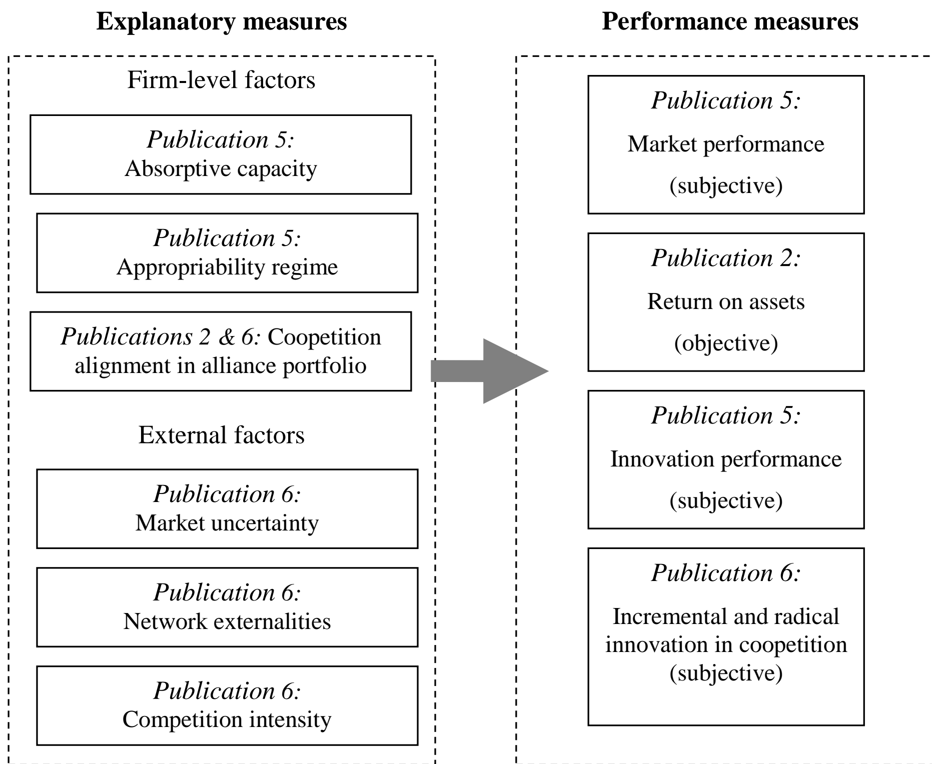

Figure 3. The quantitative measures used in the study

4. SUMMARY OF THE PUBLICATIONS AND RESULTS

This chapter summarizes the results of the publications, first individually and then in the form of a synthesis of the results of the whole study. As an illustration of the role of the individual publications in the whole thesis, Table 3 briefly sets out their objectives, theories, methodologies, and main contributions.

The objectives of the individual publications were derived from the research questions of the thesis, and are examined from several theoretical and methodological perspectives. The common theoretical point of departure is the utilization of one or more of the theories adopted - the resource-based view of the firm, game theory, and transaction cost economics - in understanding the premises of value creation and appropriation in coopetition. The resource-based view is applied in all of the studies, thus creating a theoretical bridge and logical convergence across the publications. Game theory is applied in most of the publications, mainly in explaining the rationale behind coopetition. It features most strongly in publications 1 and 4, in which the distinctive features of coopetition are conceptualized in terms of value creation and appropriation. Transaction cost economics is used in the studies in which opportunism and the related implications are of major concern. On the methodological level it is worth noting that the thesis includes conceptual as well as empirical publications. The conceptual papers lay the groundwork for the whole thesis in exploring the distinctive features of coopetition in general (publication 1) and in an innovation context (publication 4). The empirical papers, on the other hand, provide explorative evidence of coopetition through qualitative inquiry (publication 3), and the performance implications of a coopetition strategy in quantitative terms (publications 2, 5, and 6).

Table 3. A summary of the publications and their main contributions to the thesis

Publication	***Objective***	***Theories used***	***Methodology and data***	***Main contribution***
1. Is coopetition different from cooperation? The impact of market rivalry on value creation in alliances	To examine how market rivalry affects value creation and appropriation in alliances	Resource-based view Game theory Transaction cost economics	Conceptual	Distinguishing the differences between coopetition and collaboration between non-competing firms
2. The effect of strategic alliances between key competitors on firm performance	To examine the relationship between coopetition and firm performance	Resource-based view	Quantitative, based on a sample gathered from annual reports and the SDC Platinum database	Providing evidence that coopetition matters in terms of the firm's financial performance
3. Tug of war in innovation – coopetitive service development	To examine the role of coopetition in collaborative service innovation	Resource-based view	Qualitative, based on material gathered in 14 interviews from 12 organizations	Presenting a case study that explores the distinctive features of coopetition
4. What´s in it for me? Creating and appropriating value in innovation-related coopetition	To examine the role of coopetition in value creation and appropriation in an innovation context	Resource-based view Game theory Transaction cost economics	Conceptual	Building a conceptual model of value creation and appropriation in innovation-related coopetition
5. Coopetition strategy – when is it successful? Empirical evidence on innovation and market performance	To examine the contingency factors that distinguish between the success of coopetition-oriented vs. non-coopetition-oriented strategies	Resource-based view Game theory	Quantitative, based on a sample of 213 firms gathered from a cross-sectional survey of Finnish markets	Empirical examination of the role of market uncertainty and network externalities in the success of a coopetition strategy
6. Incremental and radical innovation in coopetition – The role of absorptive capacity and appropriability.	To examine the firm-specific capabilities that are relevant in gaining benefits from coopetition in an innovation context	Resource-based view Game theory Transaction cost economics	Quantitative, based on a sample of 138 firms gathered from a cross-sectional survey of Finnish markets	Empirical examination of absorptive capacity and the appropriability regime affecting innovation results in coopetition

4.1. Publication 1: Is coopetition different from cooperation? The impact of market rivalry on value creation in alliances

Background and objective

The first publication addresses the sub-question of *how to distinguish coopetition from cooperation between non-competitors*. The objective is to explain in what way the two differ, and to show that the difference is not necessarily negative or positive by definition. It is posited that coopetition incorporates distinctive benefits and risks associated with competitive positioning between collaborating firms in end-product and strategic-resource markets. The publication thus lays the groundwork for the whole thesis in investigating what distinguishes coopetition from cooperation between non-competitors.

Results and contribution

The results imply that coopetition is neither risky nor beneficial by definition. The study adopts the view that similar resources possessed among competitors may increase the risks or benefits depending on other factors. In particular, the way in which firms design and manage their alliances with respect to market rivalry and their common and specialized knowledge determines how the benefits and risks of coopetition are structured. In some instances competitive positioning in the end-product markets could be seen as increasing competition for the value that is created in the collaborative relationship. In such cases the relationship could be perceived as a zero-sum game (implying potential "learning race", Hamel, 1991). In some types of relationships it is possible to avoid the negative effect of competitive issues by focusing on pre-competitive or other parts of the value chain that do not involve competition. In these cases coopetition is not particularly different from other types of collaborative arrangements in that the collaboration concerns non-competitive parts of value chain, or is otherwise isolated from competition. Finally, some relationships may leverage on the existing market rivalry by enlarging the size of the whole market through the creation of new or improved business opportunities, thereby creating the possibility of a positive-sum game for all participants.

4.2. Publication 2: The effect of strategic alliances between key competitors on firm performance

Background and objective

The second publication addresses the sub-question of *what is the relationship between coopetition and firm performance.* This is a fundamental issue, and there is no straightforward answer given the multitude of factors involved. It is generally assumed that coopetition may be a beneficial strategy that facilitates the gaining of competitive advantage (Lado et al., 1997). Current contributions linking it with firm-level performance are very scarce, however (for an exception see Luo et al., 2007). Thus, the purpose of this study was to review the earlier literature on the topic, as well as to conduct an empirical experiment using publicly available data on leading firms in the global ICT sector.

Results and contribution

The study investigates how coopetition affects firm performance, measured in terms of return on assets (ROA). The data was collected from the global ICT sector, with the help of the SDC Platinum alliance database, the Thomson Financial database, and the firms' annual reports. The results of the hierarchical regression analysis imply that having some competitors among all of a firm's alliances positively affects its performance. On the other hand, having too many alliances in the group of firm's key competitors has a negative effect. This implies that firms should be aware of the risks involved in cooperating with too many of their most direct competitors. This publication provides a basis on which to build in showing that coopetition matters for firm performance, for better or for worse. The rest of the thesis continues along these lines in exploring the firm-specific and firm-external issues that affect coopetition success.

4.3. Publication 3: Tug of war in innovation – coopetitive service development

Background and objective

The third publication addresses the sub-question of *what is the role of coopetition in value creation and appropriation.* The focus is on service development, which is explored in a case study of Finnish mobile TV services with specific emphasis on coopetition. The case is an example of technology-based services, and illustrates the various challenges that are distinctive to the management of coopetition. The role of the publication in this thesis is an explorative one. The case study was carried out in an early phase of the research process, before designing the survey instrument used in publications 5 and 6, and it offered practical insights into value creation and appropriation in coopetition.

Results and contribution

The results suggest that timing is a critical issue in coopetitive service development, in that many of the challenges are connected to the simultaneous collaboration and competition that give rise to conflicting business interests in potential future markets. This tension between value creation and appropriation may result in the withholding of knowledge, and in other kinds of inertia in the relationship. It seems that collaboration is emphasized in the earlier phases of service development, just as competition is emphasized in the later phases, which are closer to commercialization. However, the phases are not completely separate, and this creates major challenges for both individuals and organizations. It was also found that collaborating firms need not only complementary and heterogeneous resources but also similar resources in order to ensure the creation of a market for the new services. As far as high-technology markets are concerned, issues such as critical mass, interoperability, and finding a common ground become important. Furthermore, in addition to facilitating and motivating the creation of a horizontal market, the competitive element between firms also increases the willingness to enhance and differentiate their offerings (see also Bengtsson and Kock, 2000). Thus, when managed properly, coopetition may enhance market creation (through the collaborative creation of value), and also

increase the speed of introducing new and differentiated services to customers (through the individual appropriation of value).

In sum, it could be said that coopetitive service development follows its own unique logic in terms of value creation and appropriation, which cannot be explained solely in terms of the competitive or the cooperative paradigm. The phases are partially intertwined, but the main emphasis of the different phases can be identified. In the value creation phase, issues related to similar understanding of business logic (through the possession of similar resources and capabilities) are important in terms of motivating the parties to create a base for emerging product and service markets. Knowledge-protection-related issues come to the fore in the commercialization phase (value appropriation) in that the individual firms' business models and plans are designed outside of the collaboration (see also Hurmelinna-Laukkanen and Ritala, 2010).

4.4. Publication 4: What´s in it for me? Creating and appropriating value in innovation-related coopetition

Background and objective

The fourth publication continues the conceptual exploration of the sub-question concerning *the role of coopetition in value creation and appropriation.* The motivation for conducting the study was the lack of conceptual and theoretical development in the context of value creation and appropriation in innovation-related coopetition. Even though earlier research (including the first three publications in this thesis) has contributed in showing that coopetition embodies its own distinctive logic with its unique performance implications, the literature lacks coherent frameworks. Thus, the purpose of this study was to shed light on why coopetition is different from cooperation between non-competitors in collaborative innovation activities. It offers a series of propositions concerning collective value creation and individual value appropriation by utilizing game-theoretic, as well as resource-based and transaction cost considerations.

Results and contribution

It is proposed that the ability of a firm to reap benefits in innovation-related coopetition is contingent on factors that enable collective value creation, and on those that facilitate the individual isolation of the innovations and any subsequent profits. Further, it is suggested that the effectiveness of these factors depends on the novelty of the innovation with respect to current markets and technologies (incremental vs. radical innovations). The major factors affecting value-creation potential include the exchange of knowledge between partners (positive effect), the existence of positive network externalities (positive effect), and opportunism concerns (negative effect). In terms of value-appropriation potential the focal factors are the firm-specific capabilities in the differentiation and protection of the offering (positive effect), as well as competitive intensity (negative effect) and the available space in the markets (positive effect). These implications – as a part of the conceptual framework presented in this publication – are further empirically examined in publications 5 and 6.

4.5. Publication 5: Coopetition strategy – when is it successful? Empirical evidence on innovation and market performance

Background and objective

The fifth publication addresses the sub-question of *what are the focal external and internal factors involved in coopetition success.* Data from a cross-industry survey of 213 Finnish firms is used in this empirical investigation. Coopetition is viewed in earlier literature as potentially beneficial but also as potentially risky for a firm, but there is inconclusive evidence on the effects of a coopetition strategy on innovation and market performance: negative (Kim and Parkhe, 2009; Park and Russo, 1996), neutral (Knudsen, 2007), and positive (Luo et al., 2007; Quintana-García and Benavides-Velasco, 2004) implications are reported. Some of this variation could be attributed to the fact that such a strategy is successful in certain but not all types of business environment. In order to narrow this knowledge gap this publication examines the effect of a coopetition strategy on innovation and market performance, focusing on the moderating effects of

market uncertainty, network externalities, and competitive intensity. The aim is to find out what distinguishes the environments in which coopetition can be used as a successful strategy in terms of firm performance, compared to when it is less heavily utilized.

Results and contribution

The study provides evidence concerning the contingencies in business environments in which a coopetition strategy is beneficial for a firm's market and innovation performance. Although earlier research has identified partnership- and firm-level attributes (Chin et al., 2008; McGill, 2007; Morris et al., 2007; Oxley and Sampson, 2004), as well as industries (Arranz and Arroyabe, 2008; Spiegel, 2005) that inherently imply the success or failure of a coopetition strategy, there is still ambiguity in terms of the specific environmental contingencies that have an effect. According to the empirical findings presented in this study, market uncertainty, network externalities, and competition intensity have a moderating effect on how coopetition affects firm performance. The results concerning market uncertainty provide the most straightforward implications – coopetition increases innovation and market performance under high market uncertainty. When uncertainty is low such a strategy does not provide additional benefits. High positive network externalities imply beneficial implications for coopetition strategy, especially in terms of innovation performance. In terms of market performance, the existence of network externalities does not provide distinguishable implications between the two types of performance. In terms of competition intensity the results provide mixed evidence, suggesting that a coopetition strategy increases market performance under high competition intensity, whereas innovation performance is improved under conditions of low intensity. The direct effects of coopetition strategy are examined as well, showing a positive effect on both performance measures. On the whole, the results of this study complement those of earlier research in showing that contingency factors are important determinants of the effect of coopetition on firm performance.

4.6. Publication 6: Incremental and radical innovation in coopetition – The role of absorptive capacity and appropriability

Background and objective

The last publication continues from the sub-question concerning *the focal external and internal factors that are involved in coopetition success*, concentrating especially on firm-specific factors. The first five publications describe coopetition as a risky but potentially rewarding relationship in which the sharing, learning and protection of valuable knowledge are recognized as being among the key issues determining the possible benefits and hazards. Furthermore, competitors are perceived in earlier literature as the most risky partner type in collaborative innovation and R&D, and the greatest risks are connected to losing proprietary knowledge (Cassiman et al., 2009; Nieto and Santamaria, 2007). This suggests that mechanisms for protecting core knowledge and innovations are especially relevant in collaboration between competitors (Knudsen, 2007). On the other hand, as collaborative innovation requires the fluent acquisition and application of knowledge across company boundaries, it creates a somewhat paradoxical situation for firms in coopetition (see, for example, Bengtsson and Kock, 2000).

The contribution of this publication is to provide evidence of the factors that are related to the aforementioned issues, suggesting that the ability to acquire knowledge from external sources (conceptualized here as potential absorptive capacity, following Zahra and George, 2002) and to protect its innovations and core knowledge against imitation (conceptualized as the appropriability regime, following Teece, 1986 and Hurmelinna-Laukkanen and Puumalainen, 2007) are relevant in determining innovation outcomes of coopetition. This study also distinguishes between incremental and radical innovations as an outcome of coopetition, and suggests differing implications for the two innovation types. The utilized survey data is the same as that is used in publication 5, but the examination is limited to those firms that are engaged in on-going coopetition in innovation-related issues.

Results and contribution

Whereas collaborative innovation has been studied widely on the general level, there is a lack of exhaustive empirical research on firm-specific success factors in coopetition. Thus, this study contributes to the literature in providing empirical evidence suggesting that: 1) both the potential absorptive capacity and the appropriability regime of the firm have a positive effect on the creation of incremental innovations in coopetition; and 2) in the case of radical innovations, the appropriability regime has a positive and even stronger effect than in the case of incremental innovations, whereas the effect of absorptive capacity is not statistically significant. However, a moderating effect is found, suggesting that potential absorptive capacity is positively associated with radical innovations in coopetition under high levels of appopriability regime. The results suggest that in the case of incremental innovation an emphasis on knowledge sharing and learning will positively affect innovation results in coopetition, as will an emphasis on knowledge protection. On the other hand, when the firm is pursuing radical innovation with its rivals the heaviest emphasis should be on protecting its core knowledge and capabilities. Capabilities in knowledge acquisition are also beneficial, especially when knowledge protection mechanisms are sufficiently strong. In sum, the study shows that firm-specific capabilities related to acquiring and protecting knowledge matter in coopetition success in ensuring safe and effective knowledge exchange and related value creation, as well as ensuring the incentive effects for innovating firms in securing the potential future profits. There results provide further evidence and support some of the suggestions made in earlier research concerning the importance of simultaneous knowledge sharing and protection (Cassiman and Veugelers, 1998; Heiman and Nickerson, 2004; Knudsen, 2007).

4.7. A summary of the results of the whole thesis

Given the focus of the study on the “coopetitive advantage” of the firm, the publications foster understanding of the premises of *collective* value creation and, at the same time, *individual* value appropriation. In many cases these issues are tightly intertwined. Some publications focus more heavily on one or the other, but the focal aspects of both can be identified in most of the cases, and therefore they can be separated for analytical purposes.

Publication 1 proposes a generic framework covering the distinctive factors of coopetition, which it suggests can produce either positive-sum or zero-sum results in terms of value creation and appropriation. The actions undertaken by individual firms and the business environment in which they operate eventually determine the realization of the value. Publication 2 focuses mainly on value appropriation, examining the effect of coopetition on the firm’s return on assets. Heavy emphasis is placed on the appropriation side because of the nature and applicability of the public data used in the study. With regard to publication 3 and the qualitative case study of mobile TV service development, the issues of value creation and appropriation are related in that they arise simultaneously to some extent and affect each other. Value appropriation increases in importance the closer the development is to the commercialization phase. Publication 4 draws a very explicit distinction between value creation and appropriation, and discusses specific features of coopetition in the context of innovation in terms of both of these mechanisms. Publication 5 focuses on business environments in which a coopetition strategy can create value. Value appropriation is measured in terms of innovation and market performance, and is determined by the firm’s relative alignment towards coopetition (here: coopetition strategy) in certain environments. In publication 6, the mechanisms are strongly intertwined. Although potential absorptive capacity (knowledge acquisition) and appropriability regime (knowledge protection) are essentially firm-specific capabilities affecting its value-appropriation potential, they also have an effect on the value-creation phase. This is because firms possessing such capabilities can collaborate with their competitors in a more value-creating manner given the lower likelihood of opportunism and the increased flexibility in knowledge exchange. Table 4 summarizes the issues regarding value creation and value appropriation covered in each of the publications.

Table 4. Perspectives on value creation and value appropriation in the publications

Publication	***Value creation***	***Value appropriation***
1. Is coopetition different from cooperation? The impact of market rivalry on value creation in alliances	Common basic and specialized knowledge accumulated through the competitive process can either increase or decrease the value-creation potential of coopetition.	When the similar market position among collaborating parties is utilized in a positive-sum fashion, the value-appropriation possibilities for all individual actors increase.
2. The effect of strategic alliances between key competitors on firm performance	Only a minor focus on value creation due to the nature of the data.	Measured by return on assets (ROA). The relative number of competitors among a firm's alliances positively affects its performance. On the other hand, the relative number of alliances among its key competitors has a negative effect.
3. Tug of war in innovation – coopetitive service development	Structures enhancing the exchange of knowledge and optimal collaboration governance facilitate value creation.	Firm-specific strategic issues and knowledge protection increase in importance during the commercialization phase.
4. What´s in it for me? Creating and appropriating value in innovation-related coopetition	Knowledge sharing between competing firms and positive network externalities increase the value-creation potential of coopetition, whereas anticipated or realized opportunism decreases it.	Value-appropriation potential is determined by the available market space and the differentiation possibilities of the firm. In this, firm-specific resources and capabilities determine the eventual realization of the potential.
5. Coopetition strategy – when is it successful? Empirical evidence on innovation and market performance	Market uncertainty, positive network externalities and competition intensity determine the possible benefits of a coopetition strategy in creating value.	Measured in terms of market and innovation performance. An alignment towards coopetition in the firm's alliance portfolio makes it possible to appropriate value in certain business environments.
6. Incremental and radical innovation in coopetition – The role of absorptive capacity and appropriability.	Value-creation potential is increased through 1) the partners' potential absorptive capacity in terms of effective knowledge diffusion and 2) a strong appropriability regime in terms of the decreased likelihood of opportunism.	Measured in terms of incremental and radical innovation outcomes in coopetition. Value appropriation is determined on the firm level through firm-specific capabilities related to absorptive capacity and the appropriability regime.

As a whole, the thesis enhances knowledge in terms of showing how a coopetition strategy is manifested in the phases of value creation and appropriation, and how these phases are related to the eventual outcomes in terms of firm performance. Thus, the overall contribution relates to these issues. Figure 4 synthesizes this, illustrating the key concepts and their relative positioning in the thesis. The focus and the positioning of the individual publications in the overall contribution are indicated at the bottom of the figure.

The value-creation and value-appropriation phases are depicted separately in the figure. This does not mean, however, that they are not heavily intertwined. For example, firm-specific factors of absorptive capacity and appropriability influence the relationship-specific factors of knowledge exchange and opportunism, and vice versa. Thus, the interconnections between value creation and appropriation should be understood not as a linear process, but rather as a continuous process of collaboration and competition, including various sidesteps and feedback loops.

Issues related to value creation in the thesis include contingency and relationship–specific factors. The main focus is on the contingency factors, given the analytical focus on coopetition strategy level rather than on individual alliances. However, relationship-specific factors are also mentioned here because they are analyzed in other contexts at various points in the thesis. Issues related to value appropriation include firm-specific resources and capabilities, as well as the firm’s coopetition strategy, referring to the relative emphasis on coopetition in its collaborative and competitive strategies. Finally, various performance measures related to innovation and market performance are used to assess the strategy outcomes.

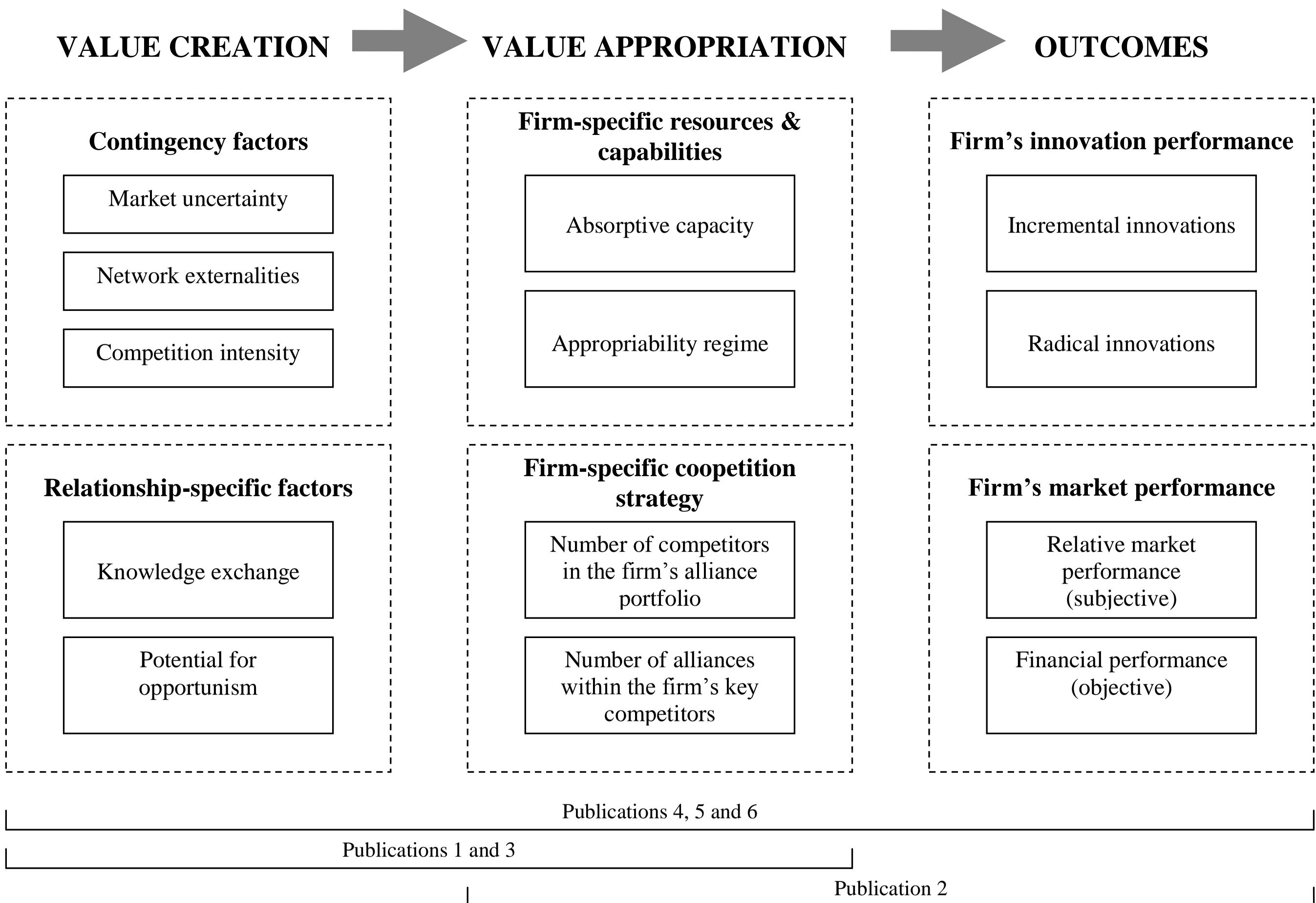

Figure 4. A synthesis of the focal concepts and their roles in the thesis

Whereas Figure 4 describes the overall contribution of the thesis in terms of the role of the key concepts in value creation and appropriation, Figure 5 synthesizes the quantitative empirical results (based on publications 2, 5 and 6). The figure highlights the relationships between the empirical constructs in the cases in which the data supported the hypotheses. The solid arrows indicate the direct effects, whereas the dotted ones signify the moderating effects. The direction of the effects are indicated as either "+" or "-".

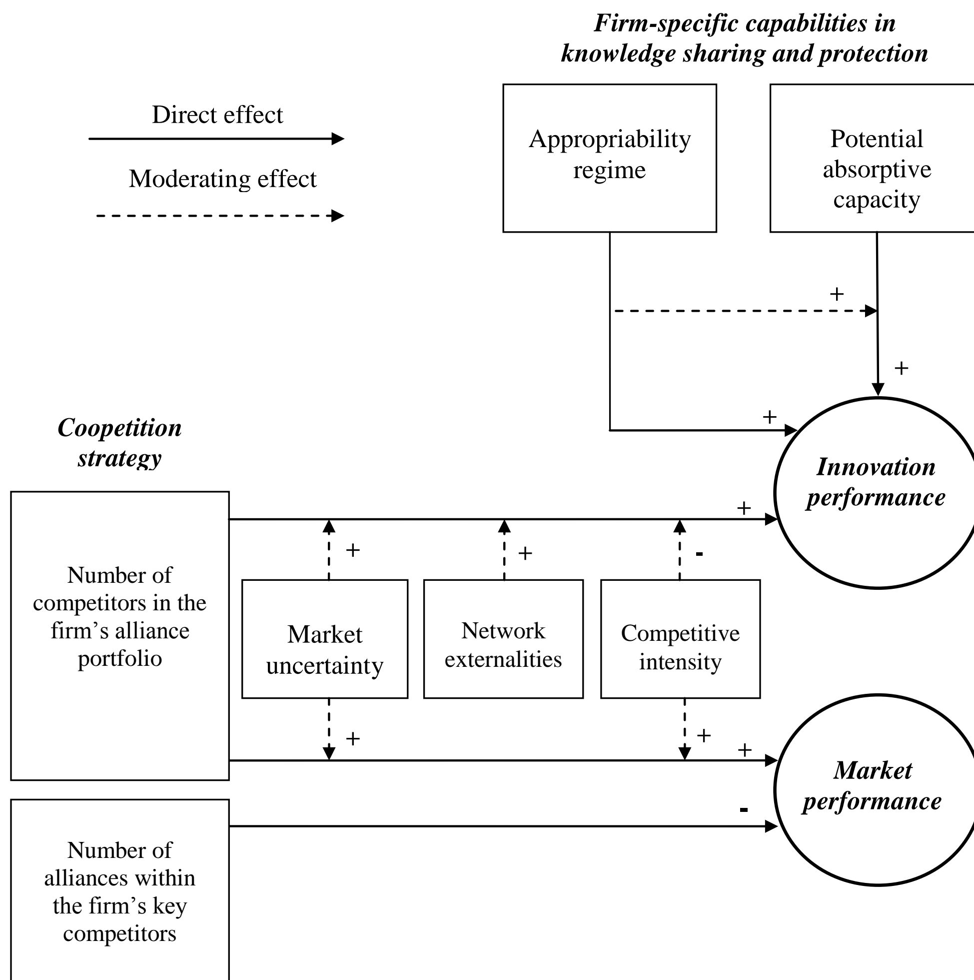

Figure 5. A synthesis of the empirical results of the thesis

5. CONCLUSIONS

The main aim in the thesis was to identify the premises of "coopetitive advantage", referring to the success factors of a coopetition strategy from the perspective of the individual firm. The study makes three main contributions. First, it illustrates how coopetition is distinguished from collaboration between non-competitors as an inter-organizational relationship. Secondly, it provides a framework and derives propositions that enhance understanding of how value is created and appropriated in coopetition from the perspective of the individual firm. Thirdly, it gives empirical evidence of how coopetition affects innovation and market performance, and identifies the focal internal and external factors that influence it.

5.1. Answering the research questions

The main research question was formulated as follows: *How is a firm able to create and appropriate value by collaborating with its competitors?* The objective was to produce evidence concerning the effect of coopetition on firm performance, and in order to achieve that, four sub-questions were posed.

The first sub-question was: *How can coopetition be distinguished from cooperation between non-competitors?* It was motivated by the fact that prior research was inconclusive on what constituted the distinctive factors of coopetition when compared to collaborative relationships in general without the competitive element. The conclusion reached was that market overlap among the collaborating firms in end-product markets is the defining factor. The implication is that firms in coopetition possess an increased amount of similar resources than those involved in other types of collaboration, and share similar market interests. These overlapping resources and interests include basic as well as specialized knowledge of markets, technologies, legislation and other factors determining the fundamental logic of doing business in a certain field. The effect of this similarity may be negative, neutral, or positive in terms of the success of coopetition on the relationship or firm level. By understanding the distinctive features of this phenomenon, it is

possible to further examine the success factors related to coopetition on different levels of analysis, both conceptually and empirically.

The second sub-question was: *What is the relationship between coopetition and firm performance?* A literature review and a quantitative study were conducted in addressing this question, and the results implicate that coopetition matters in terms of firm performance. The results provided weak support for the suggestion that it is beneficial in terms of financial performance for a firm to include competitors among its total portfolio of alliances. This result is in line with earlier research suggesting that including both collaborative and competitive relationships simultaneously within the firm's strategy arsenal enables the firm to tap into a wider variety of strategic options than if it focuses only on competition or collaboration (Lado et al., 1997). However, from an entirely different perspective – in other words considering the alliances formed among the firm's key competitors – the performance implication is negative. This latter finding confirms some of the issues identified in earlier strategy research in that collaboration with too many competitors might have a negative effect on performance because it restricts the possibilities for independent competitive activity in the industry (Bresser, 1988). Furthermore, these results show that the issue is not straightforward, and that other firm-internal and firm-external factors need to be understood in order to determine how a firm can reap benefits from coopetition.

The third sub-question was: *What is the role of coopetition in value creation and appropriation?* In conclusion it is proposed that coopetition includes a unique logic of value creation and value appropriation when compared to collaboration between non-competitors. Value creation is seen as a collective activity, whereas value appropriation is, in the end, an individual, firm-specific activity. Coopetition appears to have value-adding potential in the value-creation phase in that a common knowledge base (and other types of similar resources) facilitates collaboration in terms of both capability and incentive. The opportunity to share risks and utilize positive network externalities through collaboration is enhanced for competing firms operating in or pursuing the same markets. However, anticipated or perceived opportunism might reduce the value-creating potential among competitors. In terms of value appropriation it seems that coopetition is restrictive for the firms involved in that the competitive pressure in the markets is fundamentally

higher than it would be the case of vertical relationships. However, the firm's differentiation potential in its end-product markets and its unique resources and capabilities determine the relative share of the value that it can capture. Furthermore, when the value-creation phase creates a larger market than would be the case without coopetition, the value-appropriation potential could be positive for all of the firms involved, depending on their relative strengths in the aforementioned areas. These results therefore complement the findings of earlier studies focusing on value creation and appropriation in alliance relationships (Lavie, 2007; Oliver, 2004) in forming distinctive conceptualizations in the case of coopetition.

The fourth and final sub-question was: *What are the focal external and internal factors involved in coopetition success?* With regard to external factors, it is concluded that coopetition is a successful strategy in certain, but not all business environments. First, it may increase firm performance when markets are uncertain in terms of customer demand, technological development, and competitive dynamics. This conclusion supports earlier findings and discussion suggesting that coopetition is more relevant in high-tech than in low-tech sectors (Arranz and Arroyabe, 2008; Belderbos et al., 2004a; Carlin et al., 1994; Duysters et al., 1999; Tether, 2002). Secondly, coopetition enhances the innovation performance of a firm in business environments in which the positive network externalities are high in that rival firms are able to increase customer value in offering more interoperable and compatible products and services, and the supporting infrastructure. The results substantiate earlier suggestions that coopetition is beneficial in network industries (Fjelstad et al., 2004; Spiegel, 2005). Thirdly, it was shown that coopetition increases market performance when competition intensity is high. Allying with several rivals can help the firm to survive in a tough competitive environment, as found in earlier studies (Oxley et al., 2009). Furthermore, extant research has shown that a firm that is well connected through alliances in its competitive networks is better equipped to be active and versatile in terms of strategic competitive moves (Gnyawali et al., 2006; Gnyawali and Madhavan, 2001). Conversely, it was found that coopetition improves innovation performance especially in environments in which there is low competition intensity.

In terms of internal factors, the most relevant issues identified included the firm-specific capabilities of acquiring knowledge from outside sources (conceptualized as potential absorptive

capacity) and of protecting core knowledge and innovations (conceptualized as the appropriability regime). The conclusion is that possessing these capabilities facilitates the creation of both radical and incremental innovations in coopetition. A contingent relationship was also found – the results suggest that when the firm's knowledge and potential future profits are reasonably well protected the exchange of knowledge is more flexible, making collaborative innovation easier. These findings support those reported in earlier studies suggesting that knowledge acquisition and protection are the key issues in collaborative innovation between competitors on account of the specific challenges arising from the competitive tension in coopetition (e.g., Cassiman and Veugelers, 1998; Knudsen, 2007).

Addressing the four sub-questions constituted the groundwork for tackling the main research question: *How is a firm able to create and appropriate value by collaborating with its competitors?* In sum, the results of this thesis show that a coopetition strategy matters in terms of innovation and market performance. In particular, it is suggested that coopetition embodies a distinctive logic of value creation and appropriation from the perspective of an individual firm, which is separate from cooperation between non-competitors. The distinctive features of coopetition are related to the possession of similar resources and market position, and they may carry either negative or positive implications in terms of firm performance. The eventual success of a firm's coopetition strategy is determined through both firm-specific and firm-external factors, which are examined throughout the thesis.

5.2. Theoretical implications

The theoretical and conceptual implications of the thesis can be attributed to several frontiers. In the following the theoretical implications are discussed in terms of coopetition and alliance research, the resource-based view of the firm, and transaction cost economics.

Implications for coopetition research

The thesis contributes to coopetition research empirically in showing that a coopetition strategy matters for firm performance, which is an issue that has not been addressed systematically in the literature (see Gnyawali et al., 2008, p. 396). In examining the performance implications of coopetition strategy, the thesis has shown that firm-specific capabilities, as well as firm-external issues have an effect on the issue. Thus, it cannot be said that coopetition is a successful strategy industry-wide, nor that it should always be avoided. The results of the thesis suggest that developing an understanding of factors pertaining to the firm, its relationships, and its business environment will make it possible to assess the firm's potential to benefit from coopetition. In claiming this the thesis departs from most of the literature on coopetition and inter-competitor alliances that has focused more on success factors in *alliances between competitors* rather than in the *firm's coopetition strategy*.

By incorporating a portfolio perspective (examining coopetition as part of the overall alliance portfolio of the firm), the thesis has shown how coopetition-intensive strategies differ from those that focus more on other types of relationship. Recent research on alliances supports these implications in showing that up to a certain threshold similar partners in the firm's alliance portfolio increase the level of its innovation outcomes (Luo and Deng, 2009). Given these results, as well as the implications of this thesis, the alliance-portfolio perspective could be applied in future studies on coopetition and firm performance.

The results presented in this thesis complement the literature on coopetition focusing on the potential drivers of and motivations for such relationships. For example, several authors have suggested that a coopetition strategy should be most lucrative in cases in which there is uncertainty over technologies and markets, the pace of change is fast, and when there are strong network externalities (Gnyawali et al., 2008; Gnyawali and Park, 2009; Spiegel, 2005; Tether, 2002). The results of the thesis support these considerations in showing that a coopetition strategy does indeed facilitate improved firm performance in conditions of high market uncertainty and positive network externalities.

Implications for alliance research

The literature on alliances has considered coopetition under different labels such as horizontal or competitor alliances (Luo et al., 2007; Oum et al., 2004; Perry et al., 2004) and alliances between competitors (Hamel, 1991; Hamel et al., 1989; McGill, 2007), or has simply focused on alliances between firms operating in the same industry in which the competitive element is not explicitly recognized or studied (Lavie and Rosenkopf, 2006; Stuart, 1998). Such literature carries many implications for alliance and network management, relational and contractual governance, and alliance- and network-level performance. The main contribution of this thesis to the literature on alliances is twofold. First, in distinguishing between coopetition and alliances between non-competing firms, the thesis proposes a set of specific features to be taken under scrutiny when coopetition is explicitly addressed. These features could be used as complementary analytical tools in studies concerning the competitive element among firms in a collaborative relationship. The second contribution lies in the emphasis on value appropriation in addition to value-creation considerations. Indeed, Lavie (2007) acknowledges that the alliance literature has focused almost exclusively on value creation and has ignored value appropriation. The strong emphasis on value appropriation in this thesis is related to two aspects: 1) its focus on coopetition, which naturally requires looking at the competitive side of alliances, and 2) its focus on firm-specific competitiveness and strategy issues. It is shown that issues of value creation and value appropriation can be analytically examined as separate concepts, even though it also has to be acknowledged that they are most often intertwined. Recent alliance research incorporates this view in focusing on the co-existence of value creation and appropriation, and/or competition and cooperation (Cimon, 2004; Clarke-Hill et al., 2003; Khanna et al., 1998; Lavie, 2007; Oliver, 2004; Ross and Robertson, 2007; Zerbini and Castaldo, 2007).

Implications for the resource-based view of the firm

This study underlines the notion that certain resources and capabilities carry different implications for value creation in coopetition than in a cooperative relationship between non-competitors. This occurs in the form of an increased ability to create value in an alliance given that the competing firms possess similar resources. These differences in value-creation logic may

be either positive or negative. On the negative side, the resources and knowledge used in coopetition may be either appropriated or be in danger of being appropriated by a competitor, and the value-creation potential of the relationship therefore suffers. Alternatively, on the positive side they may be utilized in a way that leverages the knowledge and resources gained through the competitive process, and therefore create more value than in an alliance that does not include competitors as partners. From the resource-based perspective, therefore, it is notable that it is not only resource complementarity, which is a known success factor in alliances in general (Dyer and Singh, 1998; Harrison et al., 2001), but also resource similarity that facilitate value creation, especially in coopetition (Gnyawali and Park, 2009; Knudsen, 2007). The role of similar resources has been noted in the resource-based perspective on alliances by some authors (Das and Teng, 2000b; Hill and Hellriegel, 1994), but the emphasis is mainly on complementary resources. However, given that coopetition incorporates the unique logic of bundling both similar and complementary resources, it is a special case in terms of value creation. The possibility to utilize such similarity as a value-adding element depends on several firm-external and firm-internal factors, which are addressed in this thesis. Recent research on alliances has started to consider the similarity between partners in terms of alliance success (Kim and Parkhe, 2009) and firm performance (Luo and Deng, 2009), providing some new insights. However, further research is needed in order to explicitly analyze the similarity/complementarity alignment in resources and its link to the competitive positions between the collaborating firms, and the subsequent performance implications.

This study also contributes to the resource-based view in incorporating the market context into resource-based considerations, which has been proposed as an important developmental path (Sun and Tse, 2009). According to Sun and Tse (2009), the customer base could be seen as a valuable resource for a firm when the value of a certain solution depends on attracting a large number of users. In terms of coopetition, allying with certain rivals in order to create a larger and more interoperable market sooner can create a basis for competitive advantage against other constellations. A recent example of this is the battle between Blu-Ray and HD-DVD standards.

Implications for transaction cost economics

In terms of transaction cost economics, the implication of this thesis is that not all coopetition is equally risky in terms of potential opportunism hazards. Even though opportunism, or at least the threat of opportunistic behavior surely exists, the fact that firms are competitors may actually improve the value-creation potential, and the eventual value-appropriation potential of such a relationship. In this case the specificity of the relational assets actually provides the means for creating value (Dyer and Hatch, 2006; Dyer and Singh, 1998), and is not a reason to focus on using the internal organization instead of inter-firm arrangements with competitors. In fact, when coopetition forms a positive-sum game in which the involvement of all parties is essential for others to succeed, the motives as well as the potential for opportunism are reduced.

5.3. Managerial implications

For managers, this thesis advocates perceiving coopetition as part of the firm's overall business strategy. There is a need to balance the benefits with the risks involved on the strategic level, and to act accordingly in order to maximize coopetition success. It is further suggested that firms with an optimal portfolio of competitors among their partnerships, the necessary capabilities to cope with coopetition, and a favorable operating environment will be successful in this task. In particular, a firm collaborating with certain carefully selected competitors is able to perform better than the rest of the competitive field. This has been shown in many technology-intensive sectors, and the findings of this study also imply that in uncertain and turbulent business conditions, choosing the right competitors with which to collaborate is essential in order to survive in ever changing competitive environments in various industries.

In particular, assessment of the common interests and skills that contribute to creating value with different stakeholders is needed in order to achieve an optimal balance among collaboration, competition and coopetition. In this task it would be beneficial to assess the value of the firm's offering to the end customer, and to consider the possible advantages of including some of its competitors in developing the offering or the infrastructure supporting its delivery. It should be

noted that the world has changed a lot in terms of competitive dynamics – nowadays the best partner might also be the fiercest rival. A successful coopetition strategy means scanning for the most valuable partnerships, and sometimes the best opportunities for the firm are aligned with those of its competitors. The most useful coopetition initiatives are those that are beneficial to all the involved parties, simultaneously making it possible to differentiate between individual firms' offerings in the end-product markets.

Furthermore, in can be concluded that in coopetition the desired outcomes of the collaboration should be as clear as possible to all involved from the very beginning. The collaborative phase of value creation (in the form of new technologies or infrastructure specifications, for example) may be relatively straightforward because the parties often have common objectives and motivations. However, the same cannot be said about the phase in which the individual firms' value-appropriation objectives are crystallized and the business models start to emerge. This competitive phase often occurs partially at the same time as the collective value-creation phase, and the tension between them creates major difficulties for both individuals and organizations. Early agreement on the goals of the individual firms is beneficial in terms of understanding the motives behind the collaboration. In addition, the firm should naturally secure its core knowledge and innovations as well as possible through the use of various kinds of knowledge-protection mechanisms. If it does this in a reasonable way it will be able to exchange knowledge with its competitors more smoothly, which in turn will increase the potential for generating valuable results in the collaboration.

5.4. Limitations

This thesis has several limitations that should be discussed. First, most of the data was collected from Finnish markets. In the context of coopetition this might have more beneficial implications for firm performance than in some other countries. Finland is known as an environment in which legal contracts are honored and the overall governance system (including firms and institutions) operates transparently, thus the risk and potential of opportunistic behavior in coopetition may be lower than in countries with less transparent operating principles. Furthermore, as Finland is

quite a small country in terms of population and the number of firms operating in different industries, the negative relational effects of opportunistic behavior may be quite significant. However, many of the firms in the Finnish-based sample also operate in international markets, thus extending the applicability of the results beyond the Finnish context.

One major limitation is the perspective of the individual firm adopted in the study. For instance, research on coopetition and alliances has shown that the governance mode and relational governance issues such as relationship history, trust, and inter-personal relationships have a major effect in decreasing opportunism and increasing knowledge sharing (Chin et al., 2008; Kale et al., 2000; McGill, 2007; Morris et al., 2007; Oxley and Sampson, 2004; Perry et al., 2004). These issues are relevant in terms of alliance performance, and they are very likely eventually to reflect firm-level performance as well. Thus, leaving the relationship level outside the main line of inquiry reduces the explanatory power when individual alliances are discussed. However, focusing on the firm level was a conscious scope-related decision, which helped in focusing on a specific level of analysis. Further research is needed on combining these issues.

In connection with the above, consideration of qualitative attributes such as the intensity, scope and form of coopetitive relationships remains on the superficial level. The relationships are rather covered from a generalized perspective, as constituting part of the firm's overall alliance portfolio. Previous research suggests that simultaneously occurring collaboration and competitive forces in coopetition may be more or less intensive, and include various types of interactions and interdependences (Bengtsson and Kock, 1999, 2000; Easton and Araujo, 1992; Luo, 2004). Thus, future research could analyze the varying intensity more explicitly.

There are several other limitations as well. The focus in the data collection and also in the theorizing was mainly on large companies. Thus, the conclusions do not necessarily apply to small or micro-sized firms. Furthermore, the empirical studies concentrated heavily on development and innovation issues, which are quite natural collaboration contexts for competing firms. However, this left discussion about other types of coopetition more or less on the sidelines, which restricts the generalizing of the results.

5.5. Suggestions for further research

This thesis focused on the success factors of a coopetition strategy mainly from the firm's perspective, and there is therefore room for theoretical and empirical research incorporating this into other perspectives. For instance, taking a relational or alliance-level view could add further insight in terms of the benefits, risks and management of coopetition, especially in the value-creation phase. Such research could involve the combining of firm-level data with data focusing on alliances on the relationship level. These types of studies could also benefit from incorporating other theoretical perspectives, such as the business network (e.g., Håkansson, 1982; Bengtsson and Kock, 2000) or social capital and trust (Hoecht and Trott, 2006; Nahapiet and Ghoshal, 1996), in order to broaden the analysis from the firm to a more overarching relational level. There would be several advantages in this approach. For instance, value appropriation – representing the firm's relative share of the benefits derived from coopetition – could be better incorporated into models describing the value-creation processes taking place in the collaborative interactions. In this the competitive positioning between the firms should be taken under particular scrutiny given the specific problems related to value appropriation compared to alliances between vertical actors, for example. The conceptual research conducted for this thesis provides a point of departure, but more studies utilizing different types of empirical and theoretical settings should be conducted in order to further enhance understanding of the phenomenon.

In terms of alliance literature in general, further understanding of the effect of the competitive element among the collaborating parties on firm performance could be developed. Even though the extant literature has shown that competition similarity is detrimental to alliance success (Kim and Parkhe, 2009), broader understanding of the performance implications ranging beyond individual alliances is needed. In fact, recent research shows that partner similarity is beneficial up to a certain threshold level within the alliance portfolio of a focal firm (Luo and Deng, 2009).

This thesis explored the effects of firm-specific capabilities in knowledge acquisition and protection – the potential absorptive capacity and the appropriability regime – in the success of gaining innovative outcomes in coopetition. In so doing it has provided evidence especially on

the relevance of knowledge-based issues in creating and appropriating value in coopetition. However, the research in this area is still very underdeveloped and could benefit from several additional analyses. For instance, the differences between the value-creation vs. the value-appropriation phases of coopetition related to the relevance and role of these capabilities could be examined in more depth. The emphasis in value creation is on securing and facilitating safe and flexible knowledge exchange, whereas in value appropriation it shifts more toward applying the acquired and created knowledge and protecting the potential innovations and market positions. Thus, qualitative and quantitative analyses separating these phases in terms of knowledge-related capabilities would be useful and could yield interesting results. In addition, other firm-specific capabilities related to value creation and appropriation are likely to be of significance, and research focusing on such capabilities – taking into account the specific nature of coopetition – could provide interesting insights. For instance, it would be useful to find out which firm-specific factors make it easier to tackle the challenges of collaboratively creating value under simultaneous competitive tension. From the opposite perspective, it would also be interesting to focus on capabilities related to attaining and retaining competitive flexibility when collaborative linkages with competitors are abundant (Luo et al., 2007, for example, examined the effect of a firm's competitor orientation in this context).

Furthermore, whereas this thesis explores firm-specific capabilities in knowledge acquisition and protection, it would be interesting to see how other parties' capabilities in these and other aspects affect the success of the focal firm in coopetition, as well as on the success of the specific alliance. Such research could investigate pairs of alliances, ideally incorporating data collected from all involved parties. For example, relatively stronger absorptive capacity of the other party might be considered as a risk from the focal firm perspective (Hamel, 1991). On the other hand, since value-creating collaboration often requires mutual learning and knowledge sharing (Dyer and Singh, 1998), the importance of collaborative knowledge exchange is pronounced. Such activities should be more successful when the parties are able to secure their core knowledge to themselves to avoid opportunism concerns, especially in the context of coopetition. Future research will provide more insight to these issues as well.

Overall, the research reported in this thesis provides evidence concerning the success factors of a coopetition strategy from the perspective of an individual firm. They pave the way for further research focusing on coopetition on many levels of analysis, including that of the firm, the relationship, the network, and the industry.

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PART II: PUBLICATIONS