A Theory of Experienced Paradoxical Tension in Co-opetitive Alliances

Tatbeeq Raza-Ullah

Umeå School of Business and Economics
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To My Parents

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Abstract

Empirical research shows that co-opetition is a double-edged sword such that it can both help and hurt the achievement of desired performance outcomes. Despite the proliferation of co-opetitive alliances (i.e., simultaneous pursuit of competition and cooperation between firms), the field still lacks a theoretical framework that could help explain the dynamic mechanisms and conditions leading to these contradictory results. This thesis attempts to distill and integrate arguments from different literature streams of paradox, ambidexterity, and emotion to develop a framework in which experienced paradoxical tension (i.e., individual level cognitive difficulty and emotional ambivalence that pulls managers in opposite directions) serves as the main underlying mechanism through which co-opetition (i.e., an inter-firm level paradox) differentially affects performance in co-opetitive alliances. I further propose that firms' failure or success to achieve performance objectives in co-opetitive alliances is also contingent upon having a strong co-opetition capability (i.e., a multidimensional capability comprising analytical, emotional, and balancing dimensions). This thesis includes four appended papers that have used various methodologies such as anecdotes, exemplar cases, and particularly survey questionnaires to test some parts of the developed theory. The results from different papers show support for most of the tested relationships. Overall, the thesis contributes by proposing a much-need theory of experienced paradoxical tension that address the core issues related to the nature, source, consequence, and management of such tension in co-opetitive alliances. My theory has implications for research on organizational paradox and emotion, as well as for senior managers who are responsible for the success of co-opetitive alliances.

Keywords: co-opetition, paradox, tension, cognitive difficulty, emotional ambivalence, management, balance, capability, performance

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Appended Papers

Paper 1

Bengtsson, M., & Raza-Ullah, T. 2016. A systematic review of research on co-opetition: Toward a multilevel understanding. ***Industrial Marketing Management***, 57: 23-39.

Paper 2

Raza-Ullah, T., Bengtsson, M., & Kock, S. 2014. The co-opetition paradox and tension in co-opetition at multiple levels. ***Industrial Marketing Management***, 43(2): 189-198.

Paper 3

Bengtsson, M., Raza-Ullah, T., & Vanyushyn, V. 2016. The co-opetition paradox and tension: The moderating role of co-opetition capability. ***Industrial Marketing Management***, 53: 19-30.

Paper 4

Raza-Ullah, T. 2017. Emotions…really? The role of emotional ambivalence in explaining paradoxical tension–performance relationship in co-opetition alliances: Examining a moderated mediation model. Presented at the **Annual Meeting of the Academy of Management**, Atlanta.

1. Introduction

"*Sometimes one can feel a bit schizophrenic, like one is pulled apart. How can we handle this situation?*" (Manager, Permanova Ltd. involved in co-opetition).

In today's complex business environment, organizations are rife with paradoxes—"contradictory yet interrelated elements that exist simultaneously and persist over time." (Smith & Lewis, 2011: 382) that push managers to pursue competing demands simultaneously. Although long-term success may depend on engaging with both competing demands rather than choosing one over the other, doing so as described by managers is ""difficult," "very hard," [and] "challenging,"" (Smith, 2014: 1597) since managers experience paradoxical tension. The epigraph points to such tension in the context of inter-firm alliances in which the paradox materializes when firms compete and cooperate with each other at the same time, also known as co-opetition (Bengtsson & Kock, 2000b; Gnyawali & Madhavan, 2001). Experienced paradoxical tension develops when managers cognitively and emotionally are pulled between opposite directions as they attend to multiple and simultaneous competing demands in co-opetition.

Co-opetitive alliances—that is, inter-firm relationships that involve contradictory yet interrelated logics of competition and cooperation simultaneously—have burgeoned over the recent years. Indeed, research has shown that above 50% of all collaborative relationships are formed between competitor firms (Harbison & Pekar 1998). Such alliances allow firms combine the best of both cooperation and competition to gain co-opetitive advantage (Dagnino & Padula, 2002), and seek several benefits such as reducing costs, risks, uncertainties (Luo, 2007b), setting industry standards (Gnyawali & Park, 2011), entering new markets (Wu, Luo, Slotegraaf, & Aspara, 2015), and generating superior performance (Lado, Boyd, & Hanlon, 1997). However, as these alliances are inherently paradoxical and complex in nature, despite their proliferation and potential benefits, they often face the risk of failure (Dussauge, Garrette, & Mitchell, 2000). Research findings report that more than 50% of co-opetitive alliances fail to meet their expected performance outcomes (c.f. Hughes & Weiss, 2007; Khanna, Gulati, & Nohria, 1998; Lunnan & Haugland, 2008).

As co-opetitive alliances seem to be both beneficial and risky endeavors, the literature calls co-opetition a double-edged sword (Bouncken & Kraus, 2013). Indeed, empirical research has demonstrated that co-opetition is both positively and negatively associated with performance related outcomes (e.g., Bouncken & Kraus, 2013; Ritala & Sainio, 2014). Some studies have even documented a non-significant relationship between co-opetition and

performance (e.g., Mention, 2011). These mixed findings raise questions about the mechanisms or the missing links between co-opetition and performance. Prior research, however, has inclined to exclusively focus on the direct relationship between co-opetition (i.e., inter-firm level paradox) and performance (e.g., Nakos, Brouthers, & Dimitratos, 2014; Wu, 2014). As a result, the critical role of experienced paradoxical tension (i.e., individual level tension), and ways to handle it have largely gone unnoticed. Experienced tension (i.e., cognitive and emotional torn-ness), particularly of senior managers is highly consequential because what they think and how they feel influence their strategic behavior, which in turn affects performance outcomes. Indeed, these managers are powerful actors "who in their daily interactions, produce, reproduce or transform inter-organizational relationships" (Wilhelm & Sydow, 2012: 1) and their outcomes. It may thus in fact be the experienced tension acting as the underlying mechanism through which co-opetition affect alliance performance. Therefore, understanding the nature, impact, and management of such tension is crucial to explain why and how co-opetitive alliances do good versus bad in terms of achieving expected performance outcomes.

Even so, the paradox and co-opetition literatures inform us little about the paradoxical tension experienced at an individual level. Rather, both streams tend to view tension just like the paradox that exists at the organizational or inter-organizational level. For example, the paradox literature has often treated tension and paradox alike such that both terms are often used interchangeably to signify the same phenomenon (at an organizational level) that consists of contradictory yet interrelated elements (e.g., Leclercq-Vandelannoitte, 2013). By the same token, the co-opetition literature predominantly regards tension as co-opetition (Wilhelm, 2011)—that is, tension is embedded in the relationship or exists between the contradictory forces of cooperation and competition (Ansari, Garud, & Kumaraswamy, 2016), value creation and appropriation (Lacoste, 2012), knowledge sharing and protection (Yang, Fang, Fang, & Chou, 2014), and so on.

This conceptualization of tension in the co-opetition literature, on the one hand, has helped scholars to view the dynamic and "both/and" paradoxical nature of co-opetition (Bengtsson, Eriksson, & Wincent, 2010; Raza-Ullah, Bengtsson, & Kock, 2014), analyze the strength of co-opetition paradox by measuring the intensity of both competitive and cooperative interactions between firms (Bengtsson, Raza-Ullah, & Vanyushyn, 2016; Park, Srivastava, & Gnyawali, 2014), and consequently consider the unique implications of varying levels of co-opetition on performance (e.g., Liu, Luo, Yang, & Maksimov, 2014b; Wu, 2014). However, on the other hand, using tension and co-opetition alike has created confusion between "what is a tension" and "what is co-opetition (or paradox)"? Indeed, scholars have begun to acknowledge that the concept of tension is "often the broadest, most

ambiguous of the concepts, and the one that scholars frequently use to signify all paradoxical dynamics" (Putnam, Fairhurst, & Banghart, 2016: 68) including co-opetition. More importantly, viewing tension as co-opetition or paradox (i.e., tension as an inter-firm or organizational level construct) has eclipsed scholarly attention to explore tension beyond the mere juxtaposition of opposing elements that constitute the paradox. Particularly, and despite future calls to explore the microfoundations of paradoxical tension (Bengtsson & Kock, 2014; Gnyawali, Madhavan, He, & Bengtsson, 2016; Schad, Lewis, Raisch, & Smith, 2016), the critical role of tension that is experienced by individual actors while dealing with the simultaneous competing demands (i.e., tension at an individual level) has rarely been considered. It is only recently that researchers have started to investigate the important role of experienced paradoxical tension (e.g., Miron-Spektor, Ingram, Keller, Smith, & Lewis, in press). Yet, we know little about the individual cognitions and emotions that underlie tension and their influence on behavior and performance in co-opetitive alliances.

In this thesis, I therefore theorize on the experienced paradoxical tension by explicitly looking into its cognitive and emotional aspects and their consequences. The cognitive aspect refers to the degree of difficulty experienced by managers when they work with contradictory demands and are cognitively pulled between opposite directions. The emotional aspect that is closely intertwined with the cognitive one, relates to experiencing a mix of both positive and negative emotions and the degree of torn-ness felt between the conflicting impulses. Such an emotional state is known as emotional ambivalence (Pratt & Doucet, 2000), which is suggested to prevail in complex and paradoxical situations like that of co-opetition (Ashforth, Rogers, Pratt, & Pradies, 2014; Raza-Ullah et al., 2014).

Given that paradoxical tension at an individual level has remained an under-researched topic in co-opetition, we further lack key theoretical and empirical insights into the management of such tension. Management capability may thus be another important missing link explaining why some firms struggle to meet the alliance objectives. "Companies may succeed or fail based on differences in their capability to manage paradox" (Lado, Boyd, Wright, & Kroll, 2006: 115) and the resultant experienced tension. Much of the focus has, however, remained on managing the co-opetition paradox, for instance through establishing routines and employing separation and integration strategies (e.g., Bengtsson & Kock, 2000b; Fernandez, Le Roy, & Gnyawali, 2014; Gnyawali et al., 2016; Salvetat & Geraudel, 2012). While these strategies are important and thus needed to manage the paradox in co-opetitive alliances, they are not sufficient to manage the intricate nature of experienced paradoxical tension that comprises complex cognitions, ambivalent emotions and their interplay. Therefore, it is imperative to develop

an understanding of how firms may harness the positive potential of experienced tension and mitigate its negative impacts on performance.

Performance in co-opetition can be of two types—private gains and joint alliance performance. I take into account the latter in developing the theoretical framework for two main reasons. First, except few studies, co-opetition research has primarily focused on private performance of the focal firm (e.g., Bouncken & Kraus, 2013; Mention, 2011), disregarding whether the other firm has achieved its goals. Joint performance in this regard matters more because it promises win-win expected results to both firms. Second, it is more intriguing and challenging to achieve mutual goals and sustain a fruitful relationship over time despite ongoing rivalry between firms. As studies that investigate joint alliance outcomes have found negative results (e.g., Park & Russo, 1996), it may follow that managerial complexity and thus experienced tension are likely higher when maintaining and sustaining a fruitful relationship in the long term (e.g. Park & Ungson, 2001). Sustaining long-term joint performance in turn increases the importance and need of having the right set of management capabilities. Thus joint alliance performance fits better with the ambition of this thesis.

In a nutshell, as co-opetitive alliances continue to increase and managers constantly grapple with the paradoxical tension, the literature lags behind to offer a much-needed theoretical framework that could assist managers to understand and manage experienced tension. In this thesis, I therefore aim to develop a comprehensive theoretical model addressing these critical issues. Thus, the purpose of this PhD thesis is

> *"To develop a theory of experienced paradoxical tension that advances the current understanding of tension in co-opetitive alliances by explicating its nature, source, consequence, and management"*

More specifically, I address the following research questions:

1. What is the nature and source of experienced paradoxical tension in co-opetitive alliances?
2. How does experienced paradoxical tension matter for performance?
3. Under what conditions, experienced paradoxical tension is likely to facilitate performance.

To address these research questions, I draw from different literature streams to develop a theory of experienced paradoxical tension in co-opetitive alliances. Specifically, I build on the paradox and ambidexterity literature (Lewis, 2000; Miron-Spektor et al., in press; Raisch & Birkinshaw, 2008; Smith & Lewis, 2011) to illustrate the paradoxical nature of co-opetition,

enlighten cognitive difficulty, and formulate the analytical (i.e., paradoxical mind-set) and balancing (i.e., differentiation and integration routines) dimensions of management capability. Further, I borrow insights from the broad literature on emotion (Ashkanasy & Humphrey, 2011) particularly related to cognitive appraisal theories of emotion (Lazarus, 1991; Plutchik, 1994; Weiss & Cropanzano, 1996) and ambivalence in organizations (Ashforth et al., 2014; Fong, 2006; Pratt & Doucet, 2000) to explicate how cognitive appraisals of the paradoxical situations trigger emotional ambivalence; similarity intensity model (SIM; Fong & Tiedens, 2002; Thompson, Zanna, & Griffin, 1995) to explicate the different states of experienced paradoxical tension; and emotional intelligence (Mayer, Salovey, & Caruso, 2004) and emotional regulation (Hochschild, 2003) to develop the third dimension of management capability (i.e., emotional capability). The development of the theoretical model is also based on insights gained from interview data, empirical results from individual papers, and discussions with researchers interested in similar research.

I contribute in several ways. First, I advance the current understanding of paradoxical tension—that is often described as co-opetition or paradox—by providing novel insights into the nature of tension. I explicitly look into its cognitive and emotional aspects, and further develop an understanding of how co-opetition as an inter-firm paradox gives rise to paradoxical tension at an individual level. Doing so, I clarify the distinction between paradox (i.e., co-opetition as an inter-firm level phenomenon) and paradoxical tension (i.e., an individual level phenomenon) and thus establish conceptual clarity. Second, I dig deep into different states of experienced paradoxical tension (i.e., low, moderate, and high) to explore the nuances specifying why and how co-opetition paradox has differential effects on performance. I contribute by explicating that paradoxical tension experienced by key individual actors is the main mechanism that helps explain such differential effects. Third, I further advance the notion of co-opetition capability by proposing its three interrelated dimensions, and suggest that it is a must-have capability to tap into the positive potential of experienced tension. Fourth, I test some parts of the theoretical framework for empirical validation in three of the appended papers. The results from these papers provide support for most of the tested relationships. Overall, I contribute by proposing a much-need theory of experienced paradoxical tension that address the core issues related to the nature, source, consequence, and management of such tension in co-opetitive alliances.

2. Theoretical Background

As this thesis aims to develop a theory of experienced paradoxical tension in co-opetition, I start with providing a brief theoretical background of paradox and tension from the paradox literature. I then present an overview of the co-opetition field. More specifically, I discuss the emergence of co-opetition as a new stream of research, shed light on various conceptualizations of co-opetition, and reflect on the essential building blocks of the field—drivers, process, and outcomes of co-opetition. In the process section, I particularly focus on how tension and management issues have been addressed in the co-opetition literature. The main purpose of this chapter is to underscore the importance of a paradox perspective on co-opetition, problematize the current understanding of tension and managing strategies in extant literature, and set the scene for theory development (chapter, 4).

2.1. Paradox

The concept of paradox is not new. The deep conceptual roots of paradox can be traced back to the ancient philosophy thousands of years ago. However, it is only recently that scholars have begun to explore paradox in organizational and management studies (Cameron & Quinn, 1988; Lewis, 2000; Poole & Van de Ven, 1989; Smith & Berg, 1987). Organizational scholars refer to paradox as "contradictory yet interrelated elements that exist simultaneously and persist over time." (Smith & Lewis, 2011: 382). According to this definition, paradox has three core characteristics—namely, contradiction, interrelatedness, and persistence (c.f. Lewis, 2000; Putnam et al., 2016; Schad et al., 2016; Smith & Lewis, 2011). Contradiction implies incompatible, opposite, and even mutually exclusive elements (forces, logics, or demands) that form the roots of paradox (Cameron & Quinn, 1988; Putnam et al., 2016). Interrelatedness signifies the interdependence between the contradictory elements such that both are necessary and defined by each other, while persistence adds the "overtime" factor to such interdependence (Smith & Lewis, 2011). This further suggests that paradox exists as long as both elements remain regardless of the continuous and dynamic interplay creating temporal dominance of one element over the other and vice versa (Schad et al., 2016). Another important implication is that paradox is distinct from a dilemma or an either/or situation in which one alternative can be selected over the other. Paradox, on contrary, represents a both/and situation in which both elements operate simultaneously and thus no choice can be made between the contradictions (Cameron & Quinn, 1988).

Scholars explore various perspectives on paradoxes related to whether paradoxes exist in the system or are socially constructed (Schad et al., 2016).

Some studies view organizational systems as inherently paradoxical such that contradictory elements are embedded in the systems (c.f. Cameron & Quinn, 1988; Clegg, 2002). A recent review article (Putnam et al., 2016) on the contrary, takes a bottom-up approach and argues for a constitutive view of paradox. This view suggests that discourse, language, and social interactions enact rather than reflect paradoxes. Thus paradoxes develop or "emanate from [ongoing] social actions and interactions as organizational members respond to and process contradictions in ways that create systematic patterns …, which become embedded in routines and structures, are brought from past into the future, and evolve as organizing continues across time and space." (Putnam et al., 2016: 77).

Other scholars offer an integrative perspective and suggest that paradoxes are both inherent and socially constructed (Smith & Lewis, 2011). Paradoxes materialize through acts of organizing and persist because of the complex and dynamic nature of organizational systems. However, they may remain latent until environmental conditions like plurality, scarcity, and change, or, actors' paradoxical cognitions and subsequent rhetoric make them salient (Smith & Lewis, 2011). Similarly, Cameron and Quinn (1988: 3) note that paradoxes are more obvious and likely to be perceived in environments that are characterized by "more and increasing complexity, more and increasing turbulence, and more and increasing competition". Thus, the paradox exploration and exploitation (Raisch & Birkinshaw, 2008) for instance can be argued to persist in all systems (Fairhurst et al., 2016). Yet actors perceive it only when environmental conditions create stress in the system, or when actors are actively involved in juxtaposing both competing demands (Smith & Lewis, 2011). I follow the lead of Smith and Lewis (2011) and believe that in the context of co-opetitive alliances, paradox is inherent in the cooperative-competitive relationship between firms. It becomes salient when actors get involved in pursuing multiple, competing, and intense demands created by the environmental conditions.

The paradox literature categorizes paradoxes in to four broad categories (Lewis, 2000; Lüscher & Lewis, 2008; Smith & Lewis, 2011). First, paradoxes of learning arise as dynamic organizational systems change. Examples include exploration and exploitation (e.g., Andriopoulos & Lewis, 2009; Lavie, Stettner, & Tushman, 2010; Smith & Tushman, 2005) and stability and change (e.g., Sundaramurthy & Lewis, 2003). Second, paradoxes of organizing surface as organizations create competing designs and processes to accomplish a desired objective. Such paradoxes can be demonstrated by tensions between control and collaboration (e.g., Sundaramurthy & Lewis, 2003) and efficiency and flexibility (e.g., Adler, Goldoftas, & Levine, 1999). Third, paradoxes of belonging that focus on competing identities in organizations can be exemplified by the tension between individual and collective (e.g., Wareham, Fox, & Giner, 2014). These first three categories

mainly relate to paradoxes emerging within organization. The fourth category includes paradoxes of performing that surface from competing goals and demands of various stakeholders (Jay, 2013; Margolis & Walsh, 2003). Performing paradoxes can thus cross-organizational boundaries, and are of particular relevance in the present context because the paradox of cooperation-competition (or co-opetition paradox) that materializes in inter-firm alliances belongs to this category (see Schad et al., 2016).

Much of the scholarly attention, however, has been devoted to studying paradoxes that surface within organizations (i.e., first three categories). Thus paradoxes that develop due to inter-organizational ties (Das & Teng, 2000; Lado et al., 1997) have largely remained under-researched. Although paradoxes in general share the same core characteristics of contradiction, interrelatedness, and persistence, paradoxes that surface at an inter-firm level (e.g., co-opetition) are likely to be different from those emerging within firm (e.g., exploration-exploitation). For example, unlike the latter that are pursued under the hierarchy, control, and governance of one firm, the former involves two separate entities with different organizational cultures, operational routines, and strategic interests (Lavie, Haunschild, & Khanna, 2012). The lack of full control or reliance on porous governance structures in inter-firm settings may lead to misappropriation and leakage of sensitive knowledge (Kale, Singh, & Perlmutter, 2000), which in turn can thwart the alliance success. Furthermore, external stakeholders such as government and strong customers often exert direct influence on the degree and scope of cooperation and competition between firms, which sometimes goes against the wished plans of involved firms (Mariani, 2007). In contrast, for paradoxes surfacing within firm, managers likely have the control and power to assign activities and allocate resources to different units, and thus more easily strike the balance between competing demands. Thus, paradoxes at an inter-firm level seems to be more challenging. In the theory development chapter, I explore the paradox in the context of inter-firm co-opetitive alliances, named as co-opetition paradox, throw light on how it materializes, and explicate its dynamic and complex nature.

2.2. Paradoxical Tension

Since the early influential texts in 1980s (e.g., Cameron & Quinn, 1988; Poole & Van de Ven, 1989), scholars have been defining paradox and differentiating it from other related concepts such as duality, dialectics, and dilemmas for conceptual clarity (see Putnam et al., 2016; Schad et al., 2016; Smith & Lewis, 2011). However, little has been done to delineate the conceptual distinction between paradox and *paradoxical tension*. Most often, the paradox literature confounds these terms and treats them in the same manner. For example, Leclercq-Vandelannoitte (2013: 557) use the terms interchangeably as "… tensions between control and empowerment… or

centralization and decentralization… paradoxes between freedom and servitude, … and control and flexibility…" Further, Smith (2014: 1592) argues that "paradoxes denote tensions that coexist and persist overtime" and Vince and Broussine (1996: 7) refer to paradox as "…tensions between clarity and uncertainty…" Thus a confusion remains regarding what is tension and how is it distinct from paradox per se. Infact scholars have now come to acknowledge that tension is "often the broadest, most ambiguous of the concepts, and the one that scholars frequently use to signify all paradoxical dynamics." (Putnam et al., 2016: 68). In this thesis, I argue that tension needs to be distinguished from paradox so that it can be explored beyond 'something' that exists between contradictory elements that constitute the paradox.

The conceptual ambiguity develops because tension, just like paradox, is regarded as an organizational level construct. I argue that tension is essentially an individual level construct regardless of the level at which the paradox materializes. Tension thus refers to the difficulty experienced by individual actors when they are pulled in opposite directions as they pursue the contradictory demands inherent in the paradox. However, as highlighted by the most recent review of paradox research in management science, we still lack insights into and theorizing about the individual approaches to paradoxical tensions (Schad et al., 2016). Although few initial attempts have been made to investigate the microfoundations of paradoxical tension, as experienced by individuals (e.g., Miron-Spektor et al., in press), we still do not know what constitutes such tension. Particularly, we lack an understanding of the role of cognitions and emotions and their impact on behavior, which ultimately has consequences for firm performance. In this thesis, I take the challenge to explore such *experienced paradoxical tension* in the context of co-opetitive alliances, and discuss it in detail in theory development chapter (section, 4.2). In addition, I review the current conceptualization of tension in the co-opetition literature in section 2.6.1 below, but first I provide a general overview and state of the art of the co-opetition field.

2.3. Co-opetition as a New Research Stream

Earlier work on inter-firm relationships has been conducted within two different streams of research—competitive and cooperative streams. The competitive stream has focused on gaining competitive advantage that is realized when the focal firm is capable to lower prices, increase innovation levels, and offer unique products to customers in relation to its competitors (e.g., Porter, 1991). Cooperation among competitors is largely assumed as collusion and cartels, which are argued to "preclude multiple paths to invention and dull the incentives to be creative" (Jorde & Teece, 1989: 26). Thus a successful firm is considered as the one that is hostile, motivated to fight with other firms (Pellegrin-Boucher, Le Roy, & Gurau, 2013), and capable to win over others.

The cooperative stream, on the contrary, emphasizes developing the collaborative advantage by forming interdependent relationships in pursuit of mutual benefits such as acquiring social capital and knowledge from each other to enhance efficiency and innovation (e.g., Ahuja, 2000; Burt, 2005). Such relationships are based on mutual trust, reciprocity, and commitment to achieve win-win results, whereas intrusion of competition in these settings is considered to jeopardize the common objectives.

However, cooperative and competitive streams in isolation offer only a partial view of reality. Nowadays and in practice, firms combine both cooperative and competitive strategies simultaneously to gain a co-opetitive advantage (Dagnino & Padula, 2002) and superior performance (Lado et al., 1997). Thus these orthodox approaches have been challenged and the recent work has emphasized on re-conceptualization (Chen, 2008a), which has surfaced "co-opetition" as the new stream that includes simultaneous cooperation and competition (Padula & Dagnino, 2007). Hence a paradox perspective on inter-firm relationships becomes important and critical because it "seeks managerial strategies that support contrasting elements simultaneously." (Smith & Lewis, 2011: 396), and helps reflect the potential and synergies of contradictions (Ford & Backoff, 1988) related to co-opetition.

Co-opetition is a portmanteau of COOperation and comPETITION. According to some scholars, this neologism—coined by Novell's founder, Ray Noorda— first appeared in the 80s to describe cooperation between business competitors in the pursuit of mutually beneficial results (Afuah, 2000; Ketchen, Snow, & Hoover, 2004; Luo, 2007a; Zhang & Frazier, 2011). Co-opetition as a strategy has become quite popular after the seminal work done in the late 90s (Bengtsson & Kock, 2000a; Brandenburger & Nalebuff, 1996; Dowling, Roering, Carlin, & Wisnieski, 1996; Lado et al., 1997). Empirical evidence further indicates that collaborative ventures with competitors have proliferated (Han et al., 2012; Segrestin, 2005) such that these ventures count for more than 50 percent (Harbison & Pekar 1998).

Practical examples of co-opetition abound. Take for instance, co-opetitive alliances between Apple and Google (Raza-Ullah et al., 2014), Ericsson and Oracle (Bengtsson & Johansson, 2014), Sony and Samsung (Gnyawali & Park, 2011), and so on. The proliferation of co-opetition relationships is also obvious from the remark of COO of Oracle Corp., "If you look at the last ten years, SAP has been an awfully big competitor, the number one or number two competitor of ours, and yet…[our] engineers cooperate [with theirs]" (Chen, 2008: 292). Accordingly, research on the phenomenon of co-opetition has also increased, and became a new stream within research on inter-firm relationships and alliances, though scholars have defined and approached co-opetition in different ways, as discussed below.

2.4. The Prevailing Schools of Thought on Co-opetition

Co-opetition is a multilevel phenomenon that has been studied at the network, inter-network, firm dyad, and intra-firm levels. Further, scholars have applied various perspectives on co-opetition such as value net (Brandenburger & Nalebuff, 1996), business model (Ritala, Golnam, & Wegmann, 2014), ecosystem (Daidj & Jung, 2011), tension (Fang, Chang, & Peng, 2011; Fernandez et al., 2014), and paradox (e.g., Chen, 2008b) perspectives. Given multiple levels and perspectives, co-opetition is defined in multiple ways (Yami, Castaldo, Dagnino, & Le Roy, 2010). However, all definitions share the basic attribute of cooperating and competing with one another but differ depending on how focused or broad they are. Largely, these definitions can be classified into two schools of thought, which can be named as the actor and the activity schools of thought.

2.4.1. The actor school of thought

As the name suggests, this school proposes that competition and cooperation are divided among different actors in a value-net that includes suppliers, customers, complementors, and competitors (Brandenburger & Nalebuff, 1996). These actors in the network collaborate to create a bigger pie and compete to appropriate a larger share of that pie (Stamboulis, 2007). The focal firm collaborates with one (some) actor(s) and competes with other(s) (Afuah, 2000), for instance via a third actor or a complementor. In addition, game theory has been frequently used to predict different outcomes based on how actors interact, make choices, and affect the interplay between competition and cooperation (Pathak, Wu, & Johnston, 2014; Stamboulis, 2007). The game consists of five parts—actors, added value, rules, tactics, and scope—and if one or more of these parts are changed, the game can be turned in (or against) one's favor (Nalebuff & Brandenburger, 1997). Co-opetition, in this school of thought, is mostly studied at the network level. For instance, studies have explored co-opetition in egocentric networks (e.g., Eriksson, 2008; Hong & Snell, 2013), alliance portfolios (e.g., Bengtsson & Johansson, 2014; Ritala, 2012), multiparty alliances (Zeng & Chen, 2003), value-chain (e.g., Pathak et al., 2014; Sepehri & Fayazbakhsh, 2011), and ecosystems (Daidj & Jung, 2011; Hurmelinna-Laukkanen & Ritala, 2010). Firms are considered to collaborate with some actors such as the suppliers and customers, and compete against those that either threaten their product or service market, or make it less attractive to a certain supplier (Brandenburger & Nalebuff, 1996). The key point is that the network as a whole "gives rise to a co-opetitive situation, not a co-opetitive interaction" (Bengtsson et al., 2010: 199), which further implies that an either/or situation exists such that firms either cooperate with some or compete with other actors.

The actor school of thought has provided useful insights on how multiple actors in a network context blend cooperative and competitive relationships,

and configure and reconfigure them overtime to pursue mutually beneficial results. However, it has largely overlooked the dyadic, one to one, and direct co-opetitive interaction between a pair of firms. Dyadic level of co-opetition is important because it allows closely studying the paradoxical and intricate nature of co-opetition arising when competition and cooperation simultaneously exist in a relationship between two firms and engenders tension (Gnyawali & Park, 2011). These issues have mainly been studied under the activity school of thought.

2.4.2. The activity school of thought

This school suggests that the cooperative and competitive parts are divided between activities and not between actors (Bengtsson et al., 2010). Firms simultaneously collaborate in activities that are usually far from the customers (e.g., material development and joint transportation) and compete in activities that are close to the customers (e.g., product marketing and selling activities) (Bengtsson & Kock, 2000a). Unlike the broader approach of the actor school, the activity school presents a focused view of co-opetition in that the focal firm cooperates and competes simultaneously with the same other firm in the same period of time (Gnyawali & Park, 2011; Luo, 2007b). Thus, the activity school does not consider relationships in which the focal firm collaborates with one firm and competes with another, or collaborates at one time and competes at another (even with the same firm) as co-opetition. This stream of literature often uses a paradox lens (Raza-Ullah et al., 2014; Stadtler & Van Wassenhove, 2016) and tension lens (Fang et al., 2011; Fernandez et al., 2014) on co-opetition to study the contradictory yet interrelated logics of simultaneous competitive and cooperative interactions between firms, and the resultant tensions at multiple levels.

As I aim to develop a theory of paradoxical tension at a managerial level, I position this thesis in the activity school of thought. This positioning is consistent with scholars who argue that dyadic co-opetition is intellectually the most intriguing and managerially complex phenomenon (e.g., Gnyawali, He, & Madhavan, 2008; Park & Ungson, 2001), and that co-opetition at dyadic level allows a deeper understanding of the paradoxical nature of the phenomenon and its consequences (e.g., Bengtsson & Kock, 1999; Gnyawali & Park, 2011; Rai, 2016). Accordingly, I see co-opetition as "the dyadic and paradoxical relationship that emerges when two firms cooperate in some activities, such as in a strategic alliance, and at the same time compete with each other in other activities" (Bengtsson & Kock, 2000a: 416).

The remaining part of this chapter provides insights into the key themes—drivers, process, and outcomes of co-opetition—that have constantly remained in the spotlight of co-opetition research (see Bengtsson & Raza-Ullah, 2016). The drivers of co-opetition are important forces that potentially create the paradox of co-opetition between firms, and often make it salient to

the actors. This thesis does not explore the drivers in developing the theoretical model but acknowledges their important role in manifesting the paradox. Thus the drivers are very briefly summarized in the following section. The model developed in this thesis rather aims to dig deep into some of the under-researched aspects of the process theme. Two such important and central aspects of the process are tension and management. I provide a detailed review on these aspects and point out the shortcomings in the literature, which in turn stress the need to develop a theory around them. Lastly, outcomes of co-opetition include the private and collective gains from the co-opetitive alliances, and this thesis treats alliance performance outcomes as a dependent variable in the theoretical model.

2.5. Drivers of Co-opetition

The co-opetition literature provides a comprehensive list of push and pull factors that either motivate or force firms to engage in simultaneous cooperation and competition with others. These factors can be classified into three major (but partly overlapping) categories, which include external drivers, relation-specific drivers, and internal drivers.

2.5.1. External drivers

External drivers refer to three environmental conditions: the characteristics of a particular industry demand for certain technologies, and influence of powerful stakeholders. Related to the first condition, Dowling et al. (1996) argue that co-opetition relationships mostly occur in industries that are more concentrated (i.e., dominated by few large firms), less munificent (i.e., characterized by scarce resources), and largely interconnected (i.e., via regulations). Moreover, the structure, growth level, and uncertainty in the industry compel firms to cooperate with their competitors (Chen, 2014; Ritala, 2012). For example, Daidj and Jung (2011) discuss how the converging and blurred structures in industries like the media, video game console, and television have instigated co-opetition among firms.

Second, certain technological developments are quite complex, costly, and risky. Much of the studies have indicated that co-opetition relationships are formed to share high R&D risks and costs with each other (Gnyawali & Park, 2009), meet the short product life cycle challenges (Quintana-Garcia & Benavides-Velasco, 2004), and tackle the technological complexities and uncertainties by leveraging the skills and capabilities of each other (Bouncken & Kraus, 2013; Lin & Zhang, 2005). The well-known joint-venture (S-LCD) between two fierce competitors, Sony and Samsung is just one example to demonstrate that high challenges related to complicated technology, massive capital investment, and development of technological standards can be met through co-opetition (Gnyawali & Park, 2011).

Third, many times powerful third parties such as the government or an influential customer force firms to cooperate and compete with each other. For example, Mariani's (2007) in-depth case study of an Italian consortium of opera houses indicates that the regional policymaker induced co-opetition by imposing cooperation among the three competing opera houses. Imposed co-opetition is often triggered by the government via several policies, reforms, incentives, and subsidy models (Barretta, 2008). Besides, influential buyers also exercise their power in generating co-opetition between firms. Volvo cars, for instance, created interdependence between two rival suppliers (that competed for developing car seats and other module components) to jointly produce technically interdependent components (Dubois & Fredriksson, 2008). Moreover, studies have also found that the interlocking directorates that sit in more than one corporate boards act as a bridge between competing firms and thus induce co-opetition (Simoni & Caiazza, 2012).

2.5.2. Relation-specific drivers

Relation-specific drivers include two characteristics. The first relate to partner characteristics. Literature suggests that the best alliance partner may be a strong competitor (Deming, 1993), as it likely possesses relevant capabilities and resources. Partners with distinct and complementary resources are often seen to engage in co-opetition (Luo, Shenkar, & Gurnani, 2008). Further, partners pursue co-opetition in that they need to solidify their collective power in order to influence external stakeholders such as the government or another big competitor (Luo, 2007b). Related to this, Gimeno and Jeong (2001) found that the airline dyads are more likely to initiate strategic alliances when they have a common rival. Similarly Ford and Volkswagen set up an alliance in 1980s to outcompete their major common competitor, General Motors (c.f. Park & Ungson, 2001).

The second relates to relationship characteristics that include numerous structural interdependencies among firms that are embedded in a network of relationships. Firms cooperate and compete based on these structural characteristics (Bengtsson & Kock, 2000a). Such network structures underline density, coupling, and the relative position of a particular firm in the network (c.f. Ritala & Huizingh, 2014). For example, Gnyawali and Madhavan (2001) highlight the role of structural autonomy, structural equivalence, network density, and network centrality in influencing the competitive dynamics of the network. Relatedly, Gnyawali, He, and Madhavan (2006) demonstrate how the central position and the structural autonomy of a firm in the network positively relates to its volume of competitive interactions. Bengtsson and Kock (2000a) further illustrate in an exploratory case study of the lining, brewery, and dairy industries that competitors' positions, interconnectedness, and closeness of activities to customers trigger co-opetition between them. In addition, some studies suggest that the social

aspects in a network setting, for instance, interpersonal trust and reciprocal swap of knowledge are important drivers that enhance competitors' willingness to cooperate with each other (Tortoriello, Perrone, & McEvily, 2011).

2.5.3. Internal drivers

Internal drivers refer to how open, conducive, and strong is firm's internal environment to form and maintain co-opetitive alliances. The internal environment includes firm's specific aspirations toward co-opetition and possession of needed resources and capabilities for successful relational outcomes. Scholars argue that firms pursue both prospective strategies and reactive co-opetitive strategies (Gnyawali & Park, 2009). For instance, firms consistently scan for potential opportunities, and find the right competitor-partner to pursue them. In addition, firms pursue co-opetition strategy to respond to perceived vulnerability and potential risks. Furthermore, firm's good reputation and attractiveness (Ahuja, 2000) and past experience and co-opetition mind-set (Gnyawali & Park, 2011) serve as active triggers for co-opetition formation.

2.6. Co-opetitive Process

Co-opetitive process refers to what happens during the course of co-opetition. It is the most critical part of co-opetition as results depend heavily on how the process is conducted. Literature has described the co-opetitive process in broad spectra of dimensions such as changes in cooperative and competitive moves, ambiguities, contradictions, challenges, managing strategies and so on. These dimensions of the process can be linked directly or indirectly with tension and management issues in co-opetition (Bengtsson & Raza-Ullah, 2016). Indeed, scholars have stressed that tension and management are the missing links (i.e., the process) between co-opetition and performance (Le Roy & Czakon, 2016). Relatedly, a recent systematic review of co-opetition has discussed the process dimensions as portrayed by tension between contradictory elements and management strategies such as separation and integration (Bouncken, Gast, Kraus, & Bogers, 2015). Another recent review has further highlighted that tension and management stand among the important research themes in co-opetition (Dorn, Schweiger, & Albers, 2016). Therefore, in this section, I provide a review of tension and management, and point at the need to further explore and develop an understanding of these important aspects of process.

2.6.1. Tension in co-opetition

As in the paradox literature, tension is likewise one of the most widely used concepts in the co-opetition literature. However, it is also one of the most ambiguous concepts that has been elastically used to refer to a variety of

notions implying some kind of risk or problem. For instance, it has been used to describe risk of opportunism (Bouncken & Fredrich, 2016), competitive learning (Yang, Zheng, & Zaheer, 2015), language problem (Fernandez & Le Roy, 2014), and even co-opetition itself (Wilhelm, 2011). On a broader level, literature has taken two major approaches to conceptualize tension in co-opetition: a competitive approach and a co-opetitive approach, as shown in table 1. The table further mentions the theoretical perspectives used as well as the relevant sources.

In the first approach, tension has been seen as competitive in nature. The focus has thus remained on how to outcompete the partner, win the learning race, and maximize private gains. Very often the theoretical foci of transaction cost economics (TCE; Williamson, 1981), competitive learning (Hamel, Doz, & Prahalad, 1989), and competitive dynamics (Chen, 1996), have been applied to point toward the competitive nature of tension and how it may negatively influence the performance outcomes. Scholars from the TCE perspective often argue that tension is related to competitive concerns such as opportunistic behavior, appropriability and assimilation of alliance partners' know-how and skills, and the propensity "to attain their own competitive goals [private benefits], not the collective goals of the venture" (Park & Russo, 1996: 878). Schmoltzi and Wallenburg (2012) conduct a study of 226 logistics service providers engaged in horizontal cooperation with one another, and argue that such co-opetition constellations facilitate the development of conflicts and opportunism, which harm the relationships. In this vein, Parkhe (1993) found that the perception of high opportunistic behavior leads to reduced performance levels because such competitive tension increases bonding and monitoring costs, which in turn absorb much of the expected benefits from the alliance.

Besides TCE, scholars often apply the competitive learning lens on tension. The idea of competitive learning originally comes from the learning race argument (Hamel et al., 1989). Researchers observed that in alliances between Japanese and Western firms, the former outperformed the latter primarily because they acquired more knowledge than their counterparts did. Thus, out-learning and winning the learning race in an alliance has been the main concern to gain competitive advantage over others. To exemplify, consider the event study of R&D alliances in the U.S. computing and biopharmaceutical industries. In this study, Yang et al. (2015) investigate how asymmetric learning capabilities of a focal firm relative to its partner gives the former an advantage of superior stock performance. The conceptualization of tension in their study relates to competitive learning in the alliance so that private benefits are maximized. The results show that firms with a superior partner-specific learning capability (to outlearn the partner) would be rewarded with higher cumulative abnormal returns. Yang et al. (2015) further found that the

existence of external competition in terms of market similarity between firms exacerbates the tension for competitive learning.

In a similar fashion, Bouncken and Fredrich (2016) study the conditions under which co-opetition relationships lead to greater in-learning in the medical device industry. In-learning builds on the notion of absorptive capacity and refers to leveraging the external knowledge to help boost private performance and competitive wins. The authors have conceptualized tension as competitive, which fundamentally arises from opportunistic behavior, knowledge leakage, and higher competition. Moreover, scholars using the network and competitive dynamics approach have also considered tension as competitive in nature. This view generally refers to tension as the strain or threat imposed by one opponent on the other (Chen, Kuo-Hsien, & Tsai, 2007) and the related actions of the attacker and defender (Chen & MacMillan, 1992; Smith, Grimm, Gannon, & Chen, 1991). For instance, Chen et al. (2007) found that the perceived competitive tension would be greater when the relative scale and the volume of attacks of a given rival on a focal firm's market are stronger. Based on such competitive tension view, Sanou, Le Roy, and Gnyawali (2016) examine the criticality of focal firm's centrality in the co-opetitive network to improve its competitive standing vis-à-vis its industry competitors. Their study suggests that the central position in the co-opetitive network contributes to focal firm's competitive aggressiveness through increased variety and volume of competitive actions, which in turn lead to greater market performance. Their study further suggests that such competitive tensions are higher in co-opetitive networks in comparison with pure cooperative networks.

Tension has also been assumed as competitive in nature in studies that have focused on the relational benefits and risks. For instance, Pellegrin-Boucher et al. (2013) explore the evolution of co-opetitive agreements between firms in enterprise resource planning industry. Their findings indicate that while vertical cooperation creates stable and long-term relationship, horizontal co-opetition relationships are more instable. This is because of the likelihood that 'competitive tension' is higher in horizontal co-opetition particularly when the competences and resources of both firms overlap and the risks of opportunistic behavior are higher. Moreover, Eriksson (2008) investigates two crucial managerial challenges related to identifying and achieving a suitable balance between competition and cooperation in a buy-supplier relationship. Despite emphasizing the importance of balancing cooperation and competition, tension is treated as a condition of competition such as "[c]ompetition may … be defined as a condition of tension between different actors" (Eriksson, 2008: 428).

The competitive approach toward tension is limited because it ignores the fact that competition and cooperation are interdependent such that, in addition to pursuing competitive and private benefits, firms also engage in

collaborative efforts like sharing resources and knowledge to obtain mutual and common benefits. While some may argue that the competitive view of tension does not neglect the issue of cooperation, rather simply holds it constant, this interpretation may also be problematic. This is because co-opetition is a dynamic phenomenon which includes a constant interplay between competition and cooperation (Bengtsson et al., 2010).[1] Thus, co-opetitive tension seems to be different from pure competitive tension, as it arises from the juxtaposition of both the cooperative and competitive logics between firms, and not from one or the other element of the paradox. This in turn makes a paradox perspective important in co-opetition settings.

Table 1: Prevailing views on tension in co-opetition—Illustrative examples

Conceptualization of Tension as:	**Theoretical Perspective**	**Source**
1. Competitive Tension		
"Firms often engage in **competitive learning** with their alliance partners … and have the potential to learn proprietary knowledge from their partners **for private benefits** (356). "market similarity between partners **heightens the tension for competitive learning** between partners" (357)	Competitive Learning	(Yang et al., 2015)
"Co-opetition has stronger tensions in comparison to 'normal' alliances …, primarily originating from **opportunism risks**, specifically hold-up and **knowledge leakage** that increase with **higher competitive elements**" (1753)	Competitive Learning (Inlearing)	(Bouncken & Fredrich, 2016)
"Competitors–cooperators are often in a **learning race**…. The tension between co-opetitors is high and often remains high" (146). The focus is on how centrality in the co-opetitive network enhances **private performance** of the focal firms through **competitive activity** and **competitive variety**.	Inter-firm networks; Competitive dynamics	(Sanou et al., 2016)

[1] I will discuss the dynamic nature of co-opetition in the theory development chapter.

"This constellation [co-opetition] facilitates the development of **opportunism** and conflicts, which raise the risk of relationship failure" (53). "This underlines the necessity of combining multi-faceted control mechanisms in order to reduce **competitive tension** and achieve stable cooperation among potential competitors" (67)	Transaction Cost Economics (TCE)	(Schmoltzi & Wallenburg, 2012)
The existence of direct competition between firms leads to failure because they "are both seeking to **maximize their share** of the home market". Failure "can stem from the "risk of uncontrolled information disclosure"... that is **appropriated** by one partner from another. Moreover, "competitors also have a **greater capability to appropriate** know-how under these conditions." (878)	TCE	(Park & Russo, 1996)
"The terms tension and conflict are used interchangeably". " The focus of this study is on tensions as situations of conflict occurring in co-opetitive relationships" (262)	Conflict	(Tidstrom, 2014)
"inter-organizational tensions are higher in horizontal collaborations ... since the risks of **opportunistic behavior** are higher" (86-87)	Relational view	(Pellegrin-Boucher et al., 2013)
"collaboration between competitors might lead to tensions and **opportunistic behavior**" (118)	Proximity	(Jakobsen & Steinmo, 2016)

2. Co-opetition Tension

"By tensions, we mean the **contradictory pressures that exist** between the focal firm and other interdependent firms due to the **presence of simultaneous forces for competition and cooperation**" (1830).	Dilemma	(Ansari et al., 2016)
"Tension refers to a set of **two contradictory forces** with conflicting goals that simultaneously **exist between two organizations**." (779)	Balancing tension	(Fang et al., 2011)

"we discuss **two simultaneous activities that are in tension** — knowledge exchange and knowledge protection" (354)	Ambidexterity	(Yang et al., 2014)
The author classifies "the **tension between cooperation and competition** in networks **as co-opetition**" (664)	Co-opetition	(Wilhelm, 2011)
"**value creation and appropriation** are contradictory, **persisting tensions** of the co-opetitive relationship" (2)	Tension	(Bouncken, Fredrich, Ritala, & Kraus, 2017)
"this new hybrid form … combines cooperation and price-competitive transactions and **reflects** the **tension between value creation and value appropriation**" (649)	Co-opetition	(Lacoste, 2012)
"Alliance partners face a constant **tension between cooperation and competition**" (587).	Social Dilemma	(Zeng & Chen, 2003)
"the partner firms must balance the **tension between knowledge sharing and knowledge leakages** " (1191)	Social Exchange	(Li, Eden, Hitt, Ireland, & Garrett, 2012)
The authors highlight "the moderating effect of social capital between high/low **value creation/ appropriation tensions** and the type of innovation (radical/incremental)" (257)	Social capital; Co-opetition	(Yami & Nemeh, 2014)
"co-opetition implies a **fundamental tension between value creation and value appropriation**" (57)	Capability-based View; TCE	(Estrada, Faems, & de Faria, 2016)

The second approach treats tension as co-opetition (see table 1), just like paradox literature treats tension as paradox. This implies that tension is embedded within the alliance or exists between the competing forces inherent in co-opetition. Most often, tensions are conceptualized as "the contradictory pressures that exists between the focal firm and other interdependent firms due to the presence of simultaneous forces for competition and cooperation" (Ansari et al., 2016: 1830). Examples abound. A recent longitudinal study

investigates how the focal firm within the evolving U.S. television industry ecosystem addresses the disruptor's dilemma—a newly entrant introducing a disruptive innovation in the existing ecosystem but simultaneously gaining support of the very incumbents it disrupts (Ansari et al., 2016). Using the disruptor's dilemma lens, this study has conceptualized tension and co-opetition in the same manner. While at some places, it has suggested that the disruptor faces three co-opetitive tensions, namely intertemporal, dyadic, and multilateral, at other places the same types have been referred to as three types of co-opetition. Likewise, another empirical study in the manufacturing industry in Taiwan examines the role of relationship tensions in influencing the positive effect of relationship quality on relationship function (Fang et al., 2011). Based on Das and Teng (2000), the authors operationalized tension as a set of two contradictory forces (i.e., cooperation versus competition, flexibility versus rigidity, and long-term versus short-term orientation) that exist between the firms. Moreover, Wilhelm (2011) conducts a multiple case study of German and Japanese automobile industries and explores the interplay of horizontal supply chain and network analysis. The study focuses on the inherent tension between cooperation and competition, which is classified as co-opetition per se. In addition, the author argues that the literature defines the tension between cooperation and competition in inter-firm relationships as co-opetition, which further supports the claim that tension and co-opetition are conceptualized alike.

Alternatively, tension is very frequently described to mean two simultaneous activities that are in constant conflict with each other. These activities refer to the inherent contradictions in co-opetition. Yang et al. (2014) for instance apply an ambidexterity perspective on the contradictory simultaneous activities of knowledge sharing and knowledge protection in interfirm learning context. Knowledge sharing and protecting tension exists because on one the hand firms use alliances to learn and internalize important information and capabilities from each other, but on the other, they risk losing core competence to partners who behave opportunistically (Kale et al., 2000) particularly when they are direct competitors. Likewise, Li et al. (2012) found that the tension between sharing knowledge and protecting knowledge leakage is one of the most notable concerns in R&D alliances, and therefore suggest that firms must become capable of balancing this tension.

Another contradiction that has received increasing scholarly attention is the tension between value creation and value appropriation (Brandenburger & Nalebuff, 1996), which is found to exist in all co-opetitive projects (Cassiman, Di Guardo, & Valentini, 2009). In essence, value creation refers to the value or benefits that are created by collaborating with each other, and which cannot be possible to generate by a single firm. Furthermore, co-opetitive relationships have the potential to generate both economic value and knowledge value (Dagnino & Padula, 2002). The economic value refers to the

value that end customer is willing to pay. Value creation thus includes all mutual efforts carried out to increase this customer value. Knowledge value is the "growth in the interfirm (firm) knowledge stock" (Dagnino & Padula, 2002: 18) that although is less tangible than the economic value, yet "it ultimately translates into economic value" (Volschenk, Ungerer, & Smit, 2016: 110). Contrary to value creation, value appropriation includes all those activities that are tailored to capture and exploit the created value even if it comes at the expense of the other firm. Value appropriation is thus more about distribution of jointly created value, getting a bigger slice of the value pie, and generation of private benefits.

Numerous studies indicate the tension between value creation and value appropriation in co-opetition. Table 1 shows some of them. For example, Bouncken et al. (2017) examine the effects of value creation-appropriation tension on focal firm's innovation performance in new product development alliances in the German medical and machinery industries. Notice also that their study has operationalized tension as co-opetition. Quite similarly, Estrada et al. (2016) argue that "co-opetition implies a fundamental tension between value creation and value appropriation" (p. 57). In their study of 627 manufacturing firms, they found that the tension between value creation and appropriation has positive impact on product innovation performance of the focal firm under the contingency of intra-firm knowledge sharing and protection mechanisms. Their study also operationalizes tension as co-opetition by asking the respondent firms to indicate if they have participated in innovation-related collaborative projects with competitors.

The shift of competitive to co-opetitive lens on tension, has advanced the field in many aspects such as those related to understanding the paradoxical and the dynamic nature of co-opetition, and why both cooperation and competition are simultaneously required. However, as in paradox literature, conceptualizing and operationalizing tension and co-opetition in the same manner has also created conceptual ambiguity related to the distinction between the two concepts.[2] More importantly, as I discussed in the introduction section, viewing tension as co-opetition has resulted into overlooking the experienced tension that is experienced and felt by managers who actively involve in co-opetition. It is crucial to consider how managers and experience tension. At the core, it is managers' perceptions and feelings that drive them to take certain actions which in turn affect performance. In this thesis, I take the micro-level individual approach to tension, and argue that tension goes beyond mere competitive pressures, juxtaposition of opposing elements, or co-opetition per se. Rather, tension denotes the

[2] I will discuss in the theory development chapter that co-opetition is an antecedent of tension and that both tension and co-opetition ought to be treated as distinct concepts.

cognitive and emotional difficulty of managers that they experience while pursuing simultaneous contradictory demands in co-opetition.

2.6.2. Management strategies in co-opetition

Since prior studies have conceptualized and operationalized tension in co-opetition mainly as either competitive or co-opetitive, the suggested management strategies accordingly are tailored to manage the competitive concerns and tension between contradictions. I summarize some of the empirical studies that address management issues in Table 2. The table also provides additional important information related to the purpose, theoretical focus, and the explanation of each management strategy.

Studies that view tension as competitive in nature have mainly focused on the implementation of information control mechanisms and governance structure in co-opetitive alliances. Fernandez and Chiambaretto (2016) in an in-depth case study of two competitor firms in the telecommunication satellite manufacturing industry suggest that the management of tension related to information in co-opetition needs a combination of both the formal and informal control mechanisms. Their study illustrates that firms use formal control mechanisms to fence off the critical information from the non-critical in order to only share information that is critical to project's success via a common information system. In addition, the informal controls are needed to ascertain the degree of appropriability of information and consequently transforming the appropriable critical information into non-appropriable critical information by aggregating data, and not disclosing the calculation and cost structure methods behind it. Another multiple case study in the service innovation industry by Hurmelinna-Laukkanen and Ritala (2010) indicates the utmost importance of formal control mechanisms. The study claims that as service differs from product innovation, so do the protection mechanisms. Instead of the intellectual property rights protection (IPRs) mechanism that are appropriate in product innovation, the service innovation requires the mechanisms of human resource management, contracting, and lead time.

In another cross-industry study, Ritala and Hurmelinna-Laukkanen (2013) emphasized on the critical role of firm's ability to protect its intellectual assets from appropriation (i.e., appropriability regime) as well as acquire and utilize the external knowledge from the competitor (i.e., absorptive capacity). The results show that firm's absorptive capacity has a positive impact on its incremental innovation. Further, the appropriability regime of a firm that comprises of seven factors—IPRs, contracts, human resource management, labor legislation, lead time, secrecy, tacitness and knowledge complexity—positively moderates the relationship between absorptive capacity and innovation outcomes in co-opetition, such that as the strength of the appropriability regime increases, the relationship between absorptive

capacity and innovation outcomes becomes stronger. In addition, studies have shown that firms with higher learning capabilities similar to those of absorptive capacity increase their market performance (Yang et al., 2015).

Related studies have further highlighted the role of governance structures. For instance, Hung and Chang (2012) investigate how do co-opetitive partners tend to choose a particular governance mode in international technology alliances operating in technology turbulent environments. The results of their study suggest that co-opetition partners prefer to choose contractual agreement as a governance mode in newly established alliances. However, with an increase in the technological turbulence in the industry, partners tend to tighten the governance structure, and therefore choose joint venture as a preferable governance mode over contractual agreements. Equity governance mode is also chosen because it reduces the competitive learning between the competitor firms (Yang et al., 2015). Researchers have further studied whether the transactional governance (e.g., governance through formal contracts) or the relational governance (e.g., governance through reciprocal exchanges, trust, and commitment) mode is more suitable for product innovation in co-opetition (Bouncken, Clauss, & Fredrich, 2016). The results of this study show that when the intensity level of co-opetition is high, firms need to apply a plural governance structure that consists of both transactional and relational governance. In short, governance structures and control mechanisms are generally erected to avoid the negative effects of competitive tension.

Most of the studies that apply the paradox perspective on co-opetition, or consider tension as co-opetition, have suggested three major management strategies that are similarly discussed in the paradox literature (i.e., first and third). The first refers to the separation principle, which suggests that cooperation and competition must be separated in time, space, or level. For example, Dowling et al. (1996) recommends that the contradictory logics of cooperative and competitive interactions need to be separated between different units or departments. Oliver (2004) suggests separation in time or between levels to manage the contradictions and tension in co-opetition (Bengtsson & Kock, 2014). Bengtsson and Kock (2000) demonstrate in a case study of three industries (brewery, lining, and dairy) that individuals in the focal firm can only act in accordance with either cooperation or competition logic at one time, and therefore such contradictory interactions ought to be divided between separate units within the firm.

The second strategy relates to the involvement of a third party actor that usually enforces the formal logic of interaction that is collectively agreed upon between firms. For instance, Bengtsson and Kock (2000) show how the Swedish brewery association played a critical role to define, coordinate, and control the collaborative endeavors between the competing firms. In like manner, Fernandez et al. (2014) demonstrate that the ordering parties forced

the two competitor firms to collaborate, as the tensions between them were quite high. The third parties provided them a fair and a neutral analysis of the given situation and therefore helped those offering rational solutions to manage the tension. Moreover, Castaldo and colleagues explored how a third-party organization can facilitate the management of co-opetition in buyer-seller relationships (Castaldo, Möellering, Grosso, Grosso, & Zerbini, 2010). Salvetat and Geraudel (2012) further studied how cooperation between competitors can be initiated and supported given that the risks of opportunism are high in such relationships. Their study in the aeronautical and aerospace engineering industry underlines the role of the third party in terms of (a) a decision-maker who approbates interested actors, coordinates complex processes, and controls activities and compliance between the competitors, as well as (b) a go-between who facilitates competitors, regulates the relationship, and pacifies competitive tensions during the process of co-opetition.

The third strategy is about integration wherein firms integrate the two contradictory forces instead of separating them. Fernandez et al. (2014) based on an in-depth case study in telecommunications satellites manufacturing industry argue that in addition to the separation and the third party strategies, the project managers need to coordinate and manage the cooperative and competitive activities simultaneously. Thus an integration strategy is also needed. Another study by Le Roy and Fernandez (2015) in the same industry demonstrates that the integration principle is pursued by the project managers. This study further reveals a new principle of co-management at the working group level, which refers to implementing a bicephalous governance structure, dual management committee, and dual extraordinary steering committee to manage the dyadic co-opetition. In line with these scholars, I also emphasize separation and integration strategies as important aspects of balancing the competing demands of co-opetitive relationships, which I discuss in the theory development chapter.

Studies that have taken an actor school perspective shed light on dealing with tensions involving multiple firms. In this vein, Ansari et al. (2016) study how the focal firm that introduces a disruptive innovation into an ecosystem deals with the co-opetitive tensions. The results suggest that the disrupting firm needs to continuously configure and reconfigure its relationship with other firms in the ecosystem by frequently adjusting its strategy, technology platform, and relational positioning with respect to its competitors. Bengtsson and Johansson (2014) explore how can small and medium enterprises create and sustain entrepreneurial opportunities in fast-paced industries. Their study suggested that small firms needs to possess alliance portfolio management capabilities. Such capabilities include building legitimacy (i.e., actions that reduce perceived risk and uncertainty related to the newness and smallness of the firm), enhancing agility (i.e., quickly configuring and

reconfiguring) and creating role flexibility (i.e., different role-plays) to balance and navigate different co-opetitive relationships. Relational capability in such settings is also considered as important. For instance, Czakon (2009) claims that in the Polish banking industry, relational capability that includes three components—resource investments in cooperation, knowledge management processes, and governance to manage transaction costs of partnering—is a major source of above average earnings.

While the above mentioned management strategies are important and thus needed in co-opetitive alliance settings, they fall short of addressing the complex nature of experienced paradoxical tension, which consists of opposite cognitions and emotional ambivalence, and their interplay. In section 4.3 in theory development chapter, I offer a preliminary understanding of how such experienced tension can be managed.

Table 2: Management strategies—Illustrative examples

Authors	Purpose/Research Question	Theoretical Focus	Management	Explanation
Hung and Chang (2012)	How do co-opetitive partners tend to choose governance mode for their alliance in a technology turbulent environment?	TCE; Co-opetition	Governance modes	Co-opetition partners prefer contractual agreement (CA) as a governance model in new alliances. However, with an increase in the technological turbulence in the industry, partners tend to tighten the governance, and therefore choose joint venture (JV) as a preferable governance mode over CA.
Bouncken et al. (2016)	Through which alliance governance can firms improve their product innovation outcomes in co-opetition.	TCE; Social Exchange	Plural governance (transactional + relational)	A plural governance structure consisting of both the transactional governance and relational governance is needed to enhance product innovativeness under high levels of co-opetition.
Fernandez and Chiambaretto (2016)	How do companies manage tensions related to information in co-opetition?	Co-opetition; Information management	Formal and informal control mechanisms	Management of information related tensions requires a combination of both formal and informal control mechanisms (to manage information appropriability) and formal control mechanisms (to manage information criticality).
Hurmelinna-Laukkanen and Ritala (2010)	How does service innovation differ from product innovation in terms of protection?	Inter-firm knowledge exchange	Formal control mechanism	Instead of IPRs that are typically used in product innovations as protection mechanisms, HRM, lead-time, and contracts are used in service innovations.

Yang et al. (2015)	Does a firm's superior alliance learning capability in relation to its partner indeed yield higher stock market returns?	Alliance Learning	Partner-specific learning capability; Equity governance	A firm with a stronger specific learning capability viz a viz its partner yields superior stock performance. Equity governance reduces the competitive learning between firms.
Ritala and Hurmelinna-Laukkanen (2013)	What are the effects of the absorptive capacity and the appropriability of a firm on the incremental and radical innovation outcomes in co-opetition?	Inter-firm knowledge exchange	Absorptive capacity; appropriability regime	Absorptive capacity positively impacts incremental innovation. The appropriability regime of a firm (consisting of seven factors: IPRs, contracts, human resource management, labor legislation, lead time, secrecy, and tacitness and knowledge complexity) has a moderating effect on the positive relationship between potential absorptive capacity and radical and incremental innovation in co-opetition.
Salvetat and Geraudel (2012)	How can cooperation between competitor firms be created and supported, given the opportunism risks inherent to the co-opetitive context?	Intermediation strategies in Co-opetition	Third party	Third actor can be a decision-maker who approbates actors, coordinates complex processes, and controls activities and compliance. It can also be a go-between who facilitates competitors, regulates the relationship, and pacifies competitive tensions during the process of co-opetition.
Fernandez et al. (2014)	How do firms manage tension in co-opetition?	Tension; §	Separation; Integration; Third party	Separation and integration strategies are interdependent and are simultaneously required to manage tensions in co-opetition. Also, a third actor role is found to be critical yet a source of tension at the same time

Bengtsson and Kock (2000a)	How can simultaneous cooperation and competition between firms be managed in business networks?	Contradictory logics of cooperation and competition	Separation; Third party	”individuals within the firm only can act in accordance with one of the two logics of interaction at a time and hence that either the two parts have to be divided between individuals within the company, or that one part needs to be controlled and regulated by an intermediate actor such as a collective association” (411)
Le Roy and Fernandez (2015)	How do firms manage co-opetitive tensions at the working-group level?	Tension; Paradox	Co-management principle	“An efficient management of co-opetitive tensions relies on the implementation of a separation principle at the organizational level, a co-management principle at the working-group level and an integration principle at the individual level.” (15). Co-management includes bicephalous governance structure, dual management committee, & dual extraordinary steering committee
Ansari et al. (2016)	What challenges an entrant, particularly a start-up firm, faces in introducing a disruptive innovation into an ecosystem, and how can such challenges be addressed?	Disruptor's dilemma; Ecosystem	Configuring & reconfiguring	The focal firm (TiVo) needs to navigate co-opetitive tensions by constantly adjusting its (i) strategy, (ii) technology platform, and (iii) relational positioning within the industry (U.S. television) ecosystem.
Bengtsson and Johansson (2014)	How does co-opetition enable SMEs in creating and sustaining	Alliance Portfolio	Alliance portfolio management capabilities	SME’s alliance portfolio management capabilities that refer to building legitimacy (i.e., actions that reduce perceived risk and uncertainty related to the newness and

	entrepreneurial opportunities in fast-paced industries?			smallness of the firm), enhancing agility (i.e., quickly configuring and reconfiguring) and creating role flexibility (i.e., different role plays) are critical in to balance and navigate different co-opetitive relationships, which in turn leads to creating and sustaining opportunities.
Tidstrom (2014)	How are tensions managed in co-opetitive business networks and what are the potential outcomes of such management?	Conflict	Conflict management styles	Different types of tensions (i.e., domain, delivery, cooperation, and advertising) are managed by using styles of competition, collaboration, and avoidance. Most commonly used styles are competition and avoidance.

2.7. Co-opetition and Performance Outcomes

Studies have suggested that co-opetition is a double-edged sword (Bouncken & Kraus, 2013) which results in both negative and positive performance outcomes (Tidstrom, 2014). However, researchers have primarily focused on the individual benefits or the private performance of the focal firm. Only a handful of studies have considered the joint alliance performance. Private performance refers to those benefits that the focal firm accrues by acquiring partner's skills and applying them to its own areas of operations that are unrelated to alliance activities. On contrary, alliance performance or common benefits are those that accrue from "collective application of the learning that both firms go through as a consequence of being part of the alliance; these are obtained from operations in areas of the firm that are related to the alliance." (Khanna et al., 1998: 195). Table 3 illustrates some examples of co-opetition's effect on performance and how performance as such has been conceptualized (i.e., private or joint performance). In addition, the table also includes the theoretical focus used, authors, and purpose of studies.

Regarding the private benefits, several studies have investigated the relationship between co-opetition and focal firm's innovation related outcomes. Wu (2014) examined the effects of cooperation with competitors on the product innovation performance in a multi-industry sample of 1499 firms in China. The results indicate that high or low intensity of cooperation with competitors has a negative impact on firm's innovation outcomes. Whereas weak cooperation sacrifices some of the potential benefits achieved by working with the competitor and thus inhibits innovation, high cooperation can be harmful due to high risks of opportunistic behavior. Due to such opportunistic behavior, firms are very concerned about the intentional and accidental leakage of knowledge to the competitor firm. In this regard, research has found that such kinds of knowledge leakage have a negative influence on the relationship between knowledge sharing and firm's innovation performance (Ritala, Olander, Michailova, & Husted, 2015). Researchers have further probed into whether knowledge sourced from competitors positively contributes to firm's innovation success. However, Mention (2011) found that use of such knowledge has a negative impact on firm's propensity to introduce new to the market innovations. Moreover, the author did not find support for the relationship between co-opetition and firm's innovation novelty.

Other studies have gone one step further to examine if co-opetition affects different kinds of innovation outcomes in a distinct manner. For example, Bouncken and Kraus (2013) in the German IT industry examined the effects of co-opetition on two types of innovation performance of small and medium firms—radical and revolutionary innovation performance. They found that co-opetition is negatively associated with revolutionary innovation and positively

associated with radical innovation outcomes. Likewise, Ritala and Sainio (2014) in a cross-industry survey conducted in Finland have reported that co-opetition is negatively related to technological radicalness and positively related to business-model radicalness. Further, co-opetition has been found to increase radical innovation more strongly than the incremental innovation (Bouncken & Fredrich, 2012). Regarding whether the pursuit of co-opetition strategy fosters firm's capacity to innovate greatly than either cooperation or competition strategy pursued separately, research has found affirmative results (Quintana-Garcia & Benavides-Velasco, 2004).

Besides innovation, research has investigated other kinds of private performance such as financial performance, competitive advantage, and leveraging partner's knowledge. Considering return on equity as the performance measure, Luo, Rindfleisch, and Tse (2007) found that high or low intense competitor alliance activities tend to prove dysfunctional for firm's financial performance. They suggest that a moderate level of co-opetition intensity has a stronger influence on firm's profitability than either high or low intensity. Further, Bouncken and Fredrich (2012) measure competitive success by considering sale volume, market share, and return on investment. The results demonstrate that co-opetition improves firm's competitiveness. In an in-depth case study of co-opetition in Taiwanese supermarket industry, Peng, Pike, Yang, and Roos (2012) used 31 indicators of firm performance. Their results suggest that cooperation with competitors generates only a temporary performance advantage.

The common benefits or the alliance performance as an outcome has largely remained an under researched topic in co-opetition. Few empirical studies that address alliance performance have mainly examined the reasons that lead to alliance failures. Often the transaction cost economics perspective is applied to study failures. Park and Russo (1996) for instance applied TCE perspective to investigate why do most of the joint ventures fail. They restricted their samples to equity joint ventures in the electronics industry, and the results of 204 joint ventures indicate that as competition is inherent in ventures between competitors, it impairs their chances of survival. Given the fact that more than half of strategic alliances fail, Park and Ungson (2001) developed a conceptual framework that focuses on the primary sources of alliance failures. They suggest two main sources. The first relates to inter-firm rivalry (as Park and Ungson, 2001 suggest) that is linked with opportunistic hazards as each firm wants to maximize its private interests over the common alliance objectives. The second relates to managerial complexity which refers to the difficulty faced by managers in coordinating two distinct and independent firms (i.e., coordination costs) and in aligning alliance level operations with the long-term goals of the parent firms (i.e., agency costs).

The other two studies have focused on the common objective of the alliance and whether the overall alliance performance reached the expectations level.

Parkhe (1993) merged the theoretical insights of game theory and transaction cost economics and found from a study of 111 inter-firm alliances that the perception of opportunistic behavior in the alliance is negatively related with its performance. The study operationalized performance in terms of fulfillment of strategic needs such as if the alliance was able to co-opt or block co-opetition through, for instance, defensive and offensive measures to lower market share for a third competitor. Parkhe also found that if partners commit non-recoverable investments in the alliance, it would decrease the perception of opportunistic behavior and positively affect alliance performance. The second study used the adapted scale of Parkhe (1993) and early research and operationalized alliance performance by considering indicators such as if the alliance has met the expected outcomes and contributed to core competencies (Kim & Parkhe, 2009). The study found that the competing similarity between the alliance partners (which refers to the geographic market coverage, product market coverage, technology expertise, & overall strategic strength) deteriorates alliance performance.

It is important to note that the successful achievement of performance outcomes is a matter of whether we take the perspective of the focal firm or the partner firm (i.e., private performance) or both firms (i.e., joint performance) in co-opetition relationships. Regarding the private performance, previous studies have indicated that while one firm may have achieved its individual goals, the other may not have, resulting into mixed outcomes from the perspective of each firm (Tidstrom, 2014). Although it is important to achieve the private outcomes, it is also critical to attain the common objectives of the co-opetition alliance. Regardless of which firm has succeeded to achieve private outcomes, the achievement of joint outcomes seems to matter more because it gives win-win results to both firms. This further opens up opportunities for future collaborations, as well as, likely extends the current partnerships. Moreover , as little work has been done on the joint alliance performance in co-opetition (see table 2), and as scholars have called for studying performance outcomes other than individual achievements such as focal firm's innovation outcomes (Park et al., 2014), in this thesis, I focus on the joint performance of firms involved in co-opetition.

Table 3: Performance outcomes of co-opetition—Illustrative examples

Authors	Purpose/Research Question	Theoretical Focus	Performance: Private vs. Mutual	Consequence/Performance Implications
Ritala et al. (2015)	What is "the effect of external knowledge sharing on innovation performance under the contingencies of accidental and intentional leakages of business-critical knowledge" (22)	Inter-firm Knowledge sharing	Private – Innovation performance	Knowledge sharing is positively related to firm's innovation performance. However, accidental and intentional knowledge leakage negatively influence (moderate) this relationship.
Wu (2014)	Investigate the moderating effects of technological capability and alliances with universities on the relation between cooperation with competitors and product innovation.	Inter-firm co-opetition (as a two-continua approach)	Private – Product innovation	High or weak levels of cooperation with competitors inhibits or harms firm's product innovation. Results show that cooperation with competitors has an inverted U shaped relationship with innovation performance.
Peng et al. (2012)	Does cooperation with competitors produce superior performance?	Co-opetition	Private – 31 indicators	Cooperation with competitors generates a temporary performance advantage only. The results show that cooperation with competitors has led to better performance, at least for some time.
Mention (2011)	Do different cooperation practices and use of information from multiple origins influence	Cooperation; co-opetition; innovation	Private – Innovation novelty	Knowledge sourced from competitors has a negative impact on innovation novelty. Results also show that no significant relationship exists

	firm's propensity to introduce new to the market innovations?			between co-opetition and firm's propensity to introduce new to the market innovation.
Luo et al. (2007)	Do competitor alliances improve firm performance?	Competitor alliances	Private – Financial performance (ROE)	High or low intense competitor alliance activities deters focal firm's profitability.-Results show that a moderate intensity has a stronger influence on profitability than either high or low intensity
Bouncken and Kraus (2013)	What are the effects of co-opetition on revolutionary and radical innovation performance?	Inter-firm learning	Private – Innovation performance	Co-opetition is negatively associated with revolutionary innovation and positively associated with radical innovation.
Bouncken and Fredrich (2012)	Alliance strategy		Private - Competitive success; Radical & Incremental innovation	Co-opetition improves competitive success (sales volume, market share, ROI) and radical innovation of the focal firm. Results also show that co-opetition increases radical innovation more strongly than it does incremental innovation.
Quintana-Garcia and Benavides-Velasco (2004)	Does co-opetition strategy foster greater knowledge seeking and capacity to innovate than either cooperation or competition strategy pursued separately?	Co-opetition	Private – Innovation capability	Co-opetition strategy positively affects firm's capacity to innovate to a larger extent than does the pure competitive or cooperative strategy alone.

Ritala and Sainio (2014)	Does co-opetition foster different types of radical innovation?	Co-opetition; business model; open innovation	Private – technological, market, & business model radicalness	Co-opetition is negatively related to technological radicalness and positively related to business-model radicalness… Also co-opetition is not significantly related to market radicalness
Bouncken and Fredrich (2016)	How do firm's alliance orientation and network size influence the leveraging of knowledge gained from a competitor partner?	Inter-firm knowledge transfer and learning	Private – in-learning (i.e., learning from external resources & leveraging the absorbed knowledge)	There is no significant direct effect of co-opetition on focal firm's in-learning.
Park and Russo (1996)	Why do most of the joint ventures fail?	Transaction Cost Economics	Mutual – JV outcome	When competitors form a joint venture, the JV is more likely to fail.
Park and Ungson (2001)	"What is distinctive within a strategic alliance, as opposed to a generic partnership within an organization, which leads to particular patterns of failure?" (38)	Transaction Cost Economics	Mutual – alliance failure	Strategic alliances fail because of (i) inter-firm rivalry and (ii) managerial complexity

Parkhe (1993)	How can specific structural dimensions be tied to the alliance performance.	Game theory; Transaction cost economics	Mutual – fulfilment of common strategic goals	The perception of opportunistic behavior in an alliance is negatively related with its performance. However, commitment of non-recoverable investments in the alliance will reduce the perception of opportunistic behavior and positively impact alliance performance.
Kim and Parkhe (2009)	What are the effects of competing similarity and cooperating similarity between firms on alliance performance?	Inter-firm similarity	Mutual – joint strategic outcomes	Competing similarity between the firms (i.e., geographic market coverage, product market coverage, technology expertise, & overall strategic strength) is negatively associated with alliance performance.

3. Research Methodology

In this chapter, I articulate my ontological and epistemological considerations of the phenomena of paradox and tension in the context of co-opetitive alliances. As this thesis comprises four articles, I further discuss the practical methods used to collect data in each paper. Besides, I shed light on the process of theorizing, which has led to the development of the theoretical model (fig. 1) presented in this thesis.

3.1. The phenomena of paradox and tension in co-opetition context

Paradox scholars encourage researchers to acknowledge and reveal their ontological approaches (Fairhurst et al., 2016). Therefore, in this section I try to particularize my ontological assumptions. I have discussed earlier that the paradox literature shows different views on paradox. Concerning this, Clegg (2002) has divided paradox literature into two parts. The first part that studies *'materializing'* paradox claims that paradox is real and inherent in the nature of a phenomenon. The second part studying *'representing'* paradox claims that paradox is a means of representation (or construction) of a phenomenon. In the latter part, some scholars view paradox as an inherently social phenomenon which is formed and shaped by language, discourse, and social interactions rather than actor's perception or as something that is inherent in systems (Putnam et al., 2016). Other scholars, instead of taking either materialized or representing stand, put forward an integrative view of paradox and propose that paradox is both material—exists within the system—and socially constructed—through actors' cognitions or rhetoric (Smith & Lewis, 2011). I tend to align with this view of paradox. Smith and Lewis (2011) further suggest that paradox may remain latent until several environmental factors or actors' paradoxical cognitions juxtapose the contradictory yet interrelated elements, thereby making the paradox salient.

I believe that in the context of co-opetition, paradox is materialized through the actions of firms, and that the interactions between cooperation and competition exist independently of actors' construction. Also, and more importantly, I assume that when actors interpret and perceive such contradictory interactions (via cognitive and social mechanisms), they in fact construct a paradox and through this process, the latent paradox becomes salient. Actors, however, construct paradox in different ways depending on the degree to which they are involved in either cooperative or competitive activities or in both. Of course, this is not the only condition affecting their constructions as several other factors such as age, experience, cultural background, and the individual cognitive makeup of actors also define their

view on the paradox. In other words, "What appears paradoxical to one, therefore, may not be paradoxical to another" (Ford & Backoff, 1988: 89).

Furthermore, actors get involved in daily social interaction processes with others as they work with contradictions, and thus through discourse and rhetoric they may develop a socially constructed representation of the paradox. Since, several individuals are involved in similar interactions; a shared understanding of the situation within different sub-group may also develop. Although I acknowledge the importance of such ongoing processes and see them as being part of actors' construction and response to a specific situation, studying how such social processes evolve and influence actors' construction is beyond the scope of this thesis.

In short, co-opetition paradox, in my view, comes into being when firms start to cooperate and compete simultaneously—that is, co-opetition paradox is a reality that has materialized at an inter-firm level—but remains latent until actors perceive it. Thus, it is actors' construction of this reality that makes the paradox salient. This is because, although reality exists yet people construct it in different ways, and are moved with respect to their construction of reality and not the reality per se. Thus, the perception of paradox affects how actors react to it and it is therefore the construction of the situation which is important for firm's strategic response, and not the real paradox that exists in the relationship. Reality is too complex and thus goes beyond the capacity of humans to accurately and fully capture it, however, what they determine and call as reality is what they construct.

When the paradox becomes salient, and actors engage in pursuing competing logics of coopetition, they experience tension. This process includes actor's cognitive appraisals of the evolving, multiple, and competing demands that they simultaneously need to attend to in co-opetition. As the demands are paradoxical, so are their cognitions. Consequently, they experience cognitive difficulty as their cognitions clash because pursuing contradictory goals simultaneously tend to pull them in opposing directions. Moreover, they also feel torn between positive and negative emotions (also known as emotional ambivalence) as co-opetition is an emotion-laden strategic context including events that trigger conflicting emotions (see section 4.2 for details). As cognitions and emotions are closely related and influence each other (c.f. Elfenbein, 2007), by the same coin I believe that cognitive difficulty and ambivalent emotions interact with each other to form and shape experienced tension. Thus, I see tension as an *individual level* cognitive-emotional construct, which is distinct from the paradox that exists at the *inter-firm level*. Also, note that this experienced tension is paradoxical as it arises from the paradox, and comprises conflicting cognitions and ambivalent emotions.

3.2. How to reach knowledge of the phenomena?

Researchers can use several methods to know about the phenomena in question. In general, it may be wise to start with reviewing the existing literature and make sense of how the phenomena have been approached and understood in prior research. Additional sources of knowledge may include industry reports, databases, and other authentic records such as company press releases, magazines, and newspapers. Through such reviews and data sources, several empirical examples related to how co-opetition paradox materializes at the inter-firm level can be identified. In other words, the simultaneous competitive and cooperative interactions between firms can be determined through such sources independent of individual construction of the paradox as mentioned above. Researchers could investigate the degree of competition by looking into the number of product segments markets, geographic markets, and actual competitive action exchanges between firms such as price cuts and advertising campaigns. Cooperative endeavors can be identified, for instance by looking at the number of cooperative projects, joint product/service launches, and patent deals between the firms. Another important and credible way could be to ask senior managers directly who have the necessary knowledge about the levels of intensity of cooperation and competition between firms.

In our case, we relied on the responses of key managers who indicated the intensity of cooperation and competition separately (third appended paper, using quantitative survey method). We then created an index of co-opetition paradox (that juxtaposed cooperation and competition) by multiplying cooperation intensity with competition intensity. Doing so allowed us to know about the latent paradox inherent in the relationship (i.e., at inter-firm level).[3] To further know about the experienced (or cognitive) paradoxical tension that arises when the paradox becomes salient, we asked respondents about the level of difficulty they experience as they work with both cooperating and competing demands of co-opetition paradox (appended papers 3 & 4). Further, to measure the emotional aspects of experienced tension, we asked about the degree to which they feel both positive and negative emotions or feel torn between them (paper 4). The proposed theoretical model also includes the variables of coopetition capability and performance. Knowledge about coopetition capability was acquired by asking questions related to analytical, emotional and balancing dimensions (appended papers 3 & 4). Performance data was gathered by asking respondents if they were satisfied with the alliance performance. I further looked for the firm performance data (ROA

[3] Please note that although the main methods used are survey studies, I have also incorporated exemplar and anecdotal cases (from other studies, press releases, and newspapers) to showcase the materialization of co-opetition paradox. Also, existing interview data were used to analyze the emotional aspect of tension.

and ROE) and other control variables such as age and firm size from the Retriever database.

Regarding experienced tension, one could argue that survey methods may not depict real-time and genuine cognitions and emotions, as managers may attempt to rationalize their thoughts and feelings in retrospect. An alternative method, for instance, real-time observations aided by video recordings of live meetings and interactions could have been more valuable. While I acknowledge such limitations, I also believe that limitations are inherent in many methods that are used in social research. For example, when respondents are aware of my presence in their physical space or that their emotional displays are being videotaped, they may suppress their emotions, for instance to be seen as professionals. As a result, the likelihood that true emotions are not captured may still exist. In one aspect, methods like interviews or surveys may become more reliable because it would not be me interpreting managers' emotions rather they themselves would inform me about their actual felt state. Indeed, researchers have also relied on quantitative survey methods where respondents were asked to recall their experiences of emotions like anger and sadness (e.g., Li, Ashkanasy, & Mehmood, 2016).

I acknowledge that questionnaire surveys do not unpack the ongoing processes of working with contradictions in co-opetition. However, the main focus of this thesis is on the experienced tension of individual actors, and not the processes through which these tensions evolve. Notice also that I cannot go inside the head and heart of actors to identify and crosscheck the experienced tension or feeling state, rather believe that they answered my questions sincerely and honestly.

3.3. The theorizing process

The model presented in chapter 4 (fig. 1) is built on an integration of numerous insights gained from different literature streams, interviews with managers from different firms, and discussions with my supervisors and participants in different conferences. This process started right in the start of my PhD studies. Some of the key influential texts that really inspired me during those initial days (and still today) were (are) Bengtsson and Kock (2000), Cameron and Quinn (1988), Das and Teng (2000), Gnyawali and Park (2011), Lado et al. (1997), Lewis (2000), Smith and Lewis (2011), and a conference paper by Gnyawali, Madhavan, He, and Bengtsson (2012). Based on these and other readings, I was quite convinced that co-opetitive alliances are paradoxical in nature and that an imbalance between cooperation and competition (considered as tension) creates instability and often premature dissolution of alliances. However, I was still looking for something because the notion of tension, without the role of cognitions and emotions looked

incomplete to me. Although some studies mention about emotions (mostly about negative emotions) and cognitions in the paradox and co-opetition literatures, the issue of the paradoxical nature of experienced tension has not been addressed. Therefore, I started looking into the literature on psychology, particularly relating to emotions. Some of the inspirational texts from this literature include Frijda (1988), Weiss and Cropanzano (1996), Lazarus (1991), Elfenbein (2007), Fong (2006); Fong and Tiedens (2002), Pratt and Doucet (2000), Ashkanasy, Zerbe, and Härtel (2005), and Huy (2012). Thus I have drawn on insights from the literatures on co-opetition, paradox, and emotion to build an integrative model of experienced paradoxical tension in co-opetitive alliances.

Meanwhile, as this PhD research was part of an ongoing larger project at Ericsson, I not only got access to the already collected data (mostly in form of audio and transcribed interviews), but also got opportunities to conduct several interviews by myself at Ericsson.[4] By listening to these interviews and talking to few senior managers, I came to know that managers deal with paradoxical tensions quite frequently and they often face ambiguous situations that involve complex emotions. Although I have not used these interviews in my studies, they have helped me make sense of the inherent paradoxes, felt difficulties, and managerial issues in alliance settings, and thus guided the development of my theoretical model. Furthermore, I extensively worked with the director of group sourcing and partnering division of Ericsson (along with my supervisors) to develop new scales on experienced paradoxical tension and managing capabilities. In this process, we further invited other professional experts from different firms as well as relevant researchers in a manner similar to Rai (2016). We did several pretests and involved 6 academics and 6 experts from the industry for assessing the content validity. The aim was to test some parts of the model. Through these and other previously done pretests, I tested some parts of the model in papers 3 and 4, and thus from time to time I kept refining and updating my theoretical model based on the results.

3.4. Methodology used in each paper

In this section, I discuss in detail the practical methods used in each paper.

3.4.1. Paper 1:

[4] I conducted 6 interviews at Ericsson with senior managers including the vice president (1 interview) and director (2 interviews) of group sourcing and partnering, head of ICT strategic sourcing (2 interviews), and strategic product manager of TV and Media division (1 interview). Each interview lasted for upto one and a half hour.

A systematic review of research on co-opetition: Toward a multilevel understanding (Bengtsson & Raza-Ullah, 2016).

Systematic literature review: In line with Hair and colleagues who argue that a literature review can be a useful first step to provide a better understanding of the field and broader issues (Hair, Money, Page & Samouel, 2007), I started with reviewing the literature on co-opetition. I conducted a systematic review right in the beginning of my PhD studies, which resulted in a conference paper presented at EURAM 2013 (Bengtsson, Johansson, Näsholm, & Raza-Ullah, 2013). Later on, we redid a completely new analysis which resulted in the appended paper 1. In this paper, we adopted the methodology of a systematic literature review (Crossan & Apaydin, 2010; Watson, 2015) to build a comprehensive overview and a conceptual consolidation (not an empirical consolidation) of the dispersed field of co-opetition. Therefore, descriptive and qualitative techniques instead of statistical methods are utilized to analyze the data (Crossan & Apaydin, 2010). The key value-added outcome of systematic review is the production of new knowledge based on thorough data collection and a careful analysis (ibid, 2010). Scholars argue that a systematic literature review must be both efficient and effective (Boell & Cecez-Kecmanovic, 2015; Watson, 2015). To gain efficiency, we used the protocol-based approach to identify and select articles which is considered to be reproducible, transparent, and rigorous (Tranfield, Denyer, & Smart, 2003). Using two databases—ISI web of science and EBSCO Business Source Premier—and timespan from 1996-2014, we used several key search terms to identify the articles.[5]

3.4.2. Paper 2:

The co-opetition paradox and tension in co-opetition at multiple levels (Raza-Ullah, Bengtsson & Kock, 2014)

Secondary data: We employed several illustrative/exemplar cases from different industries to develop an understanding of co-opetition paradox and experienced paradoxical tension particularly related to emotional

[5] 1 ISI: Title = (cooperat*) AND Title = (compet*) OR Title = (collaborat*) AND Title = (compet*) OR Title = (co-opet*) OR Title = (co-opet*) OR Topic = (co-opet*) OR Topic = (co-opet*) Refined by: Web of Science Categories = (MANAGEMENT OR BUSINESS) AND Document Types = (ARTICLE OR REVIEW) AND Languages = (ENGLISH) Timespan = 1996–2014. Databases = SSCI. Lemmatization = On Results: 215.
EBSCO: Search Terms TI cooperat* AND TI compet* OR TI collaborat* AND TI compet* OR TI co-opet* OR TI co-opet* OR AB co-opet* OR AB co-opet* Limiters — Peer Reviewed; Pub- lished Date from: 1996–2014; Publication Type: Academic Journal; Document Type: Arti- cle Expanders — Apply related words Search modes — Find all my search terms Last Run Via Interface — EBSCOhost Search Screen — Advanced Search Database — Business Source Premier.
Results: 598.

ambivalence. We used Factiva database to collect data about Apple and Google to demonstrate how co-opetition paradox can materialize between partner firms. Factiva database covers more than 32,000 sources including newspapers, transcripts, journals and magazines from around the world. The analysis of the data revealed how conflicting interests developed between the partner firms that notoriously frosted the relationship and transformed the cooperative relationships in to a co-opetitive one. The second case incorporated insights from an in-depth case study of Sony-Samsung conducted by Gnyawali and Park (2011). This case illustrated how co-opetition paradox can materialize between competitor firms.

We analyzed two more cases involving small and medium sized firms—co-opetition between Skega and Trellex, and between Permanova and Rofin Sinar. These cases were built on earlier data collected by one of the co-authors. Introductory face-to-face interviews were conducted with the presidents, top management, and departmental managers. In the Skega–Trellex case, nineteen interviews were carried out such that same individuals were interviewed for up to four times. In Permanova–Rofin case, eight senior managers were interviewed up to three times. Other key informants who influenced or were involved in the co-opetitive activities were also identified and interviewed. Based on co-author's understanding of the cases, the relevant parts of the interviews highlighting managerial engagement in pursuing contradictory demands were selected. We then re-interpreted those parts with an emotion lens that I developed through the literature reviews. Thus, I looked for quotes relating to feelings of ambivalence as well as expressions of discrete emotions. The analysis of the data indicated that emotional ambivalence was prevalent at multiple levels in both the stable contexts (i.e., Skega-Trellex) and the dynamic contexts (i.e., Permanova-Rofin).

3.4.3. Paper 3:

The co-opetition paradox and tension: The moderating role of co-opetition capability (Bengtsson, Raza-Ullah, & Vanyushyn, 2016)

Survey Questionnaire: As tension and capability have not been studied quantitatively in the previous studies, we developed new scales of these variables. Scale items for these constructs were developed based on the previous research on paradoxical tension and ambidexterity following the procedure prescribed by DeVellis (1991). We assessed the content validity of the scale items by asking experts to evaluate the measure items. A panel of ten firms and six faculty members were requested to assess the face validity of the constructs, similar to the validity check in Wu et al. (2010). We provided the nominal definition of constructs and asked them for suggestions on semantic

changes and to recommend us with the items to include in the questionnaire. Finally, the scale items were shown to two senior managers in one large Swedish manufacturing firm for their assessment and recommendations. The process ended up in retaining four items for external tension, two for internal tension, and four for co-opetition capability (See Table 3 for more details about alpha and factor loadings).

The survey (in Swedish language) was administered by Swedish Central Bureau of Statistics (SCB) from May to October 2013. The initial sample included 5000 firms belonging to multiple industries in Sweden. After two reminders, 1,532 complete responses were received, which account for 30.64% of response rate. Please note that some of the established multi-item scales had to be shortened. This is because SCB reacted on similar items measuring the same construct regardless of whether it was an established construct by previous studies.

3.4.4. Paper 4

Emotions…really? The role of emotional ambivalence in explaining paradoxical tension–performance relationship in co-opetition alliances: Examining a moderated mediation model (Raza-Ullah, 2017)

Survey Questionnaire: A second survey was designed as we found the need to develop new scales that also include emotional aspects of tension and capability, as well as joint alliance performance measurements. The sample in this survey consisted of firms from the high-tech manufacturing and knowledge-intensive industries in Sweden. We selected 900 random firms using the Retriever database. In order to make sure that only relevant firms participate in the survey, we called each firm by telephone and included it in the sample if it was involved in a co-opetitive alliance. We found that 332 firms did not respond, and 164 from the remaining 568 firms were not engaged in co-opetitive alliances. Thus, we released the survey to 404 firms. Before administering the questionnaire, we followed Rai (2016) for rigorous development of new scales, and therefore conducted several pretests such as professional review and assessment of content validity, scale purification and examining dimensionality and reliability, and scale validation. In this process, we involved eight academics and eight experts from industry to give us their opinion about the items (e.g., if we ought to add, modify, or delete items) and whether the items adequately captured the related constructs. The final questionnaire was released in Swedish language and data were collected between May-December 2015. With three reminders, we received 209 complete responses accounting for a response rate of 23.2%.

4. Theory and Propositions

This chapter attempts to develop a theory of experienced paradoxical tension in the context of co-opetitive alliances by explicating: what is the nature and source of experienced paradoxical tension (RQ1), how does tension matter to performance (RQ2), and under what conditions it enhances performance (RQ3). I present the theoretical model (figure 1), discuss the constructs of the model, and theorize how they relate with one another by spelling out the propositions. Notice also that some parts of the proposed model have been empirically tested and validated in the appended papers. I discuss those contributions in the discussion chapter.

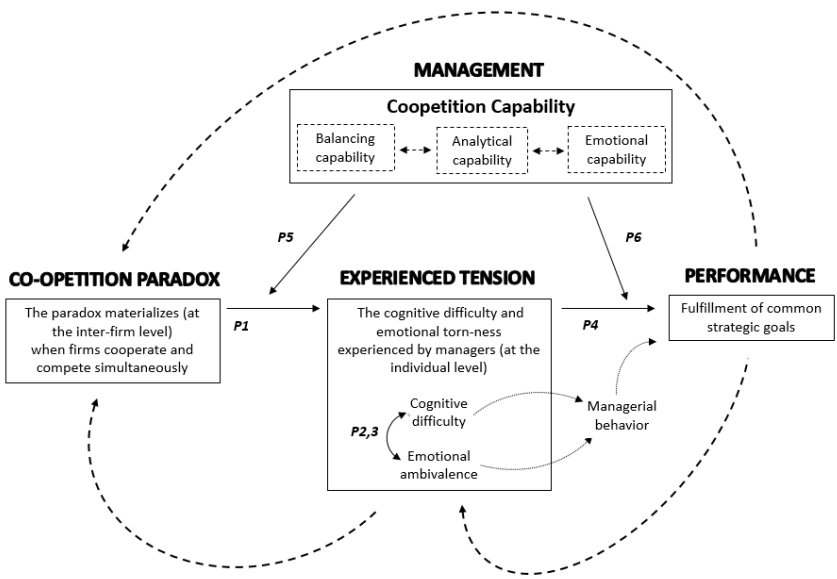

Figure 1: A theoretical model of experienced paradoxical tension in co-opetitive alliances

Figure 1 illustrates the theoretical model of this thesis. The model suggests that paradox (i.e., co-opetition) creates experienced tension for managers, which in turn has consequences for performance outcomes. It further shows the moderating role of co-opetition capability. In building this model, I integrate the disparate literatures on paradox, emotion, and co-opetition to propose the key constructs and their relationships with one another. I build on the theoretical underpinnings of the paradox literature (Lewis, 2000; Smith & Lewis, 2011) to suggest that co-opetition is a paradox that

materializes at the inter-firm level (first key construct), and serves as a main source of experienced tension in co-opetitive alliances. The second construct, tension develops when managers cognitively and emotionally feel torn between opposing directions. Managers experience cognitive difficulty when they work with multiple and simultaneous competing demands, as doing so taxes their cognitive capacity and resources. I draw on the cognitive appraisal theory of emotion (Lazarus, 1991; Plutchik, 1994) to explain how the working with competing demands of co-opetition trigger emotional ambivalence, which in turn, interact with the cognitive difficulty to form and shape tension.

The third construct of performance, which refers to the achievement of common strategic goals of the alliance, serves as the dependent variable. The model specifies how different degrees of tension affect performance. This happens through the behavioral responses of managers (in response to different degrees of tension), which in turn, affects performance. Finally, the construct of co-opetition capability is introduced, which is built on three dimensions—namely, balancing, analytical, and emotional capability—leveraged from the literatures of emotion and paradox/ambidexterity. Thus the model offers critical contingencies that moderate the proposed effects of co-opetition paradox on tension, as well as, effects of tension on performance. All the proposed relationships are denoted by *P*. The dotted lines illustrate the dynamism and interplay in the model. Tension may influence the co-opetition paradox, and failure or achievement of joint goals may affect the degree of tension, as well as, the content and scope of the co-opetitive relationship.

4.1. Co-opetition Paradox

In the theoretical model, I specify that co-opetition is an important source of tension. Co-opetition juxtaposes two opposite logics of cooperative and competitive interactions between firms. The cooperative logic stresses on working closely with each other, sharing information and resources, and creating mutually beneficial results. On the contrary, the competitive logic emphasizes on keeping distance, protecting information, and maximizing individual gains even if they come at partner's expense.[6] Although the logics of cooperation and competition seem to strongly contradict each other, yet co-opetition incorporates both of them simultaneously and make them interdependent opposites. Based on their apparent opposition and interdependence, scholars suggest that "competition and cooperation are among the most noted paradoxical organizational phenomena" (Chen, 2008b: 290). Leveraging from the paradox literature (e.g., Lewis, 2000), I argue that co-opetition is a paradox because it juxtaposes "contradictory yet interrelated

[6] In addition to the aforementioned aspects of competition related to value appropriation within the relationship (i.e., internal competition), competition also exists in the market place (i.e., external competition) between the firms.

elements [of cooperation and competition] that exist simultaneously and persist over time" (Smith & Lewis, 2011: 386). Following this, I further suggest that tension described as co-opetition in previous research (see table 1), in fact, refers to co-opetition paradox, and not to paradoxical tension experienced by managers.

Generally, co-opetition paradox materializes in two main ways. First, consider two firms that are competitors serving the same market segments. Now they have acknowledged the need to collaborate with each other. The unifying forces or the drivers to cooperate (e.g., external drivers, relations-specific drivers, and internal drivers discussed in the theoretical background chapter) are so strong that both firms believe that they would be better off by allying together despite the ongoing competition between them. Examples abound. One of the most noted example in co-opetition literature is the joint venture formation between the two bitter rivals, Sony and Samsung. In spite of head-on competition in several geographic markets and product-market segments, both firms collaborated intensively to develop flat screen LCD TV panels with an aim to improve their competitive standing in the industry (Gnyawali & Park, 2011). Another example is the strategic alliance formed between Ford and Volkswagen to enter into the Latin American markets (Park & Ungson, 2001). Also, Volkswagen and Suzuki set up an alliance because Volkswagen needed access to the Indian market and Suzuki wanted to learn and acquire Volkswagen's skills in vehicle technologies (Kumar, 2014), and so on. Second, the paradox can also materialize in a collaborative relationship between partner firms. Conflicting interests may arise during the course of collaboration, which instigate competition between the firms along with cooperation. This usually happens when one of the firms launches a product or service in the market of the partner firm. For instance, recently Microsoft has launched Surface book in to the main market of its top partners including Asus, Lenovo, and Dell, while still keeping the collaboration with them (Weinberger, 2015). Moreover, co-opetition studies have shown that how, for instance, the manufacturer in the vertical dyad with a distributor starts to compete with the latter by investing in its own brand stores, while still keeping the collaborative relationship with the distributor (Liu, Luo, Yang, & Maksimov, 2014a). Hence, co-opetition paradox can exist in both horizontal and vertical inter-firm alliances.

Co-opetition paradox is both a dynamic and a complex phenomenon. Prior literature on co-opetition has significantly contributed to our understanding of the dynamism of co-opetition by depicting it on a two-continua matrix (Bengtsson et al., 2010; Luo, 2007b). Such dynamism can be expressed on a 2 x 2 grid as shown in Figure 3. The horizontal axis represents the intensity of cooperation and the vertical axis shows the intensity of competition at the firm level. Each continuum ranges from low to high, and a combination of different intensities give rise to different forms (i.e., strength) of co-opetition paradox.

For instance, when both cooperation and competition intensities are high, the resultant paradox would be strong and balanced. On the contrary, a combination of low-low will result into a balanced but a weak paradox. These types of paradoxes appear on the balanced curve as shown in Figure 2. Other combinations may include low-high and high-low intensities which result in competition dominated and cooperation dominated paradoxes respectively.[7] These combinations also suggest that the co-opetition paradox is weak because for the paradox to be strong, both cooperation and competition ought to be intense and strongly opposing simultaneously (i.e., high-high combinations). Another combination that may lie somewhere in the middle of the figure (where balanced and unbalanced curves intersect with each other) would imply a moderate paradox. Thus, the cooperative and the competitive interactions tend to change and dynamically evolve (see Gnyawali & Park, 2011 for evolution of co-opetition between Sony and Samsung) depending on the actions taken by firms.

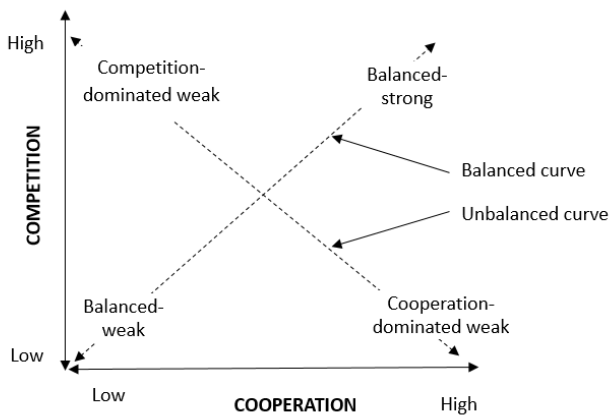

Figure 2: The dynamic nature of co-opetition paradox

Although the dynamic nature of co-opetition can also be depicted on a single continuum (as it is typically conceptualized in the paradox literature) ranging from cooperation to competition or vice versa, such depiction is limited in two main ways. First, it is only possible to view a paradox that is weak (either cooperation-dominated or competition dominated) or moderate (in the middle of the continuum). In other words, only the forms of paradoxes that lie on the unbalanced curve oscillating between two extremes on a single

[7] Note that there could be a number of various combinations. For simplicity, I have shown four combinations in the figure.

continuum are possible to conceptualize. Second, it is not possible to see both cooperation and competition increasing or decreasing simultaneously (i.e., balanced curve and combinations near it). Therefore, I argue that a two-continua approach should be used to analyse and understand a paradoxical phenomenon.

Co-opetition is also a complex a challenging phenomenon to pursue. The paradox scholars suggest that contradictory elements such as cooperation and competition seem logical in isolation, but appear irrational, inconsistent, and even absurd when considered simultaneously (Lewis, 2000). Particularly, dealing with a situation in which both the cooperative and the competitive interactions are intense (i.e., strong and balanced paradox) is likely to pose heightened challenges for managers. Under such a situation, managers confront with multiple and simultaneous competing demands like value creation versus value appropriation, knowledge sharing versus knowledge protecting, getting close versus keeping distance, short term versus long term orientations, and so on, which create tension (explained in section 4.2 below). Moreover, it is also challenging to balance a weak paradox (cooperation or competition dominated). The inherent risk in such imbalanced alliances is that they are more prone to dissolve prematurely (Das & Teng, 2000; Fang et al., 2011). Therefore, instead of making "polarized either/or distinctions that conceal complex interrelationships" (Lewis, 2000: 761), managers need to address both sides of the paradoxical demands and struggle to strike a balance between both. Such situations, however, also seem to be difficult and complicated to handle.

4.2. Experienced Paradoxical Tension

As discussed in the theoretical background, the concept of tension is one of the most ambiguous concepts often used to refer to all sorts of paradoxical phenomena (Putnam et al., 2016) including co-opetition. For instance, the terms of paradox (or co-opetition) and tension are often used synonymously in the extant literature. This conceptual ambiguity arises because of the tendency of conceptualizing tension as an organizational (or inter-firm) level construct just like the paradox (or co-opetition) (for details, see chapter 2). As illustrated in the theoretical model, I distinguish experienced tension from co-opetition paradox so that tension can be explored beyond what the paradox is comprised of. I suggest that in contrast to the co-opetition paradox that materializes at the inter-firm level through simultaneous pursuit of cooperation and competition between firms, tension ought to be seen as an individual level construct that denotes the degree of manager's cognitive and emotional difficulty in pursuing paradoxical co-opetitive demands. Thus, I take a micro-level individual approach to tension and treat it as a cognitive-emotional construct comprising of conflicting cognitions, ambivalent emotions, and their interplay. I will further argue for this assumption by

discussing cognitions and emotions separately even though tension develops through the interplay between both cognitions and emotions.

4.2.1. *The Nature and Source of Experienced Paradoxical Tension*

4.2.1.1. The Cognitive and Emotional Aspects of Tension

Specifically, I propose that tension in co-opetition refers to the difficulty experienced by managers as they work with multiple simultaneous competing demands of co-opetition, and cognitively and emotionally feel torn between the opposing directions. Working with contradictions initiates the process of cognitions (what managers think), emotions (what they feel), and an interplay between them. Cognition refers to thinking, appraising, and judging. Managers involved in co-opetition tend to consistently apply their cognitions on both the ongoing cooperative and competitive issues and their consequences for their firm. For example, in an exploratory case study of three firms in the IT and telecom industry, Bengtsson and Johansson (2014) demonstrate that managers of SMEs cognitively appraise partnerships with large firms as rewarding. This is because such partners with wider networks and access to key resources enhance the likelihood of co-creating greater value. However, at the same time, managers also realize that large firms due to power asymmetries are in a stronger position to capture the bigger slice of the created value, even if it comes at the expense of their firm (Lavie, 2007). Thus managerial cognitions are likely to clash, as the two contradictory logics of value creation and value seizure tend to pull managers in opposite directions, particularly when both are salient. As a result, they experience cognitive difficulty (torn between conflicting cognitions).

Consider another example related to the competing demands of knowledge sharing and knowledge protection (Ritala et al., 2015). In all co-opetitive projects, knowledge must be shared to meet the common objectives (e.g., solving a joint problem or launching new products together). However, it is also very likely in competitor alliances that important knowledge gets accidently leaked, which may cause harm to the competitive position and reputation of the focal firm (Jarvenpaa & Majchrzak, 2016). Although firms may put strict control mechanisms to stop leakage of sensitive knowledge to the other firm, it has turned out that tight controls also inhibit sharing of knowledge, result in little collective learning, and thus may compromise joint success (Ho & Ganesan, 2013). Thus, while on the one hand managers face the ongoing pressure to ensure that required knowledge must be shared, on the other, they struggle to protect leakage of sensitive knowledge. As a result, managers experience the cognitive difficulty because they have to meet the contradictory requirements of both sharing and protecting. The paradox

research has also found that managers who work with simultaneous competing demands in the organization describe such situations as ""difficult," "very hard," [and] "challenging,"" (Smith, 2014: 1597)". This is mainly because the paradox which itself seems irrational and complex (as discussed above) subsequently puts managers in complex and demanding situations, which ultimately pull their cognitions in opposite directions, thus creating cognitive difficulty.

Additionally, managers use their cognitions while attending to and addressing multiple other competing demands like value creating and value appropriating (Lavie, 2007), and getting close but keeping distance (Gnyawali et al., 2016). For instance, managers frequently engage in close interactions with the co-opetitive partner so that the synergistic outcomes are realized (by co-creating a bigger pie). However, they tend not to get closer in order to avoid the risks of value appropriation and knowledge spillovers (e.g., Estrada et al., 2016). Moreover, managers are constantly involved in reconciling contradictions related to partnerships in which one firm may be short-term oriented while the other firm has long-term goals, and one is flexible in its approach while the other is rigid (Das & Teng, 2000). Thus, working with multiple competing demands posed by the paradoxical situation in co-opetition creates tension for managers, as meeting multiple goals that contradict each other often makes them cognitively overburdened, overtaxed, and exhausted, which increase their cognitive difficulty.

Tension, however, is not only cognitive. The cognitive appraisal theories of emotion suggest that cognitions and emotions go hand in hand such that when people cognitively appraise something, they feel emotions (Lazarus, 1991; Plutchik, 1994). This is also consistent with one of Frijda's (1988) laws of emotions stating that "emotions arise in response to events that are important to the individual's goals, motives, or concerns" (Frijda, 1988: 351). Some scholars argue that cognition is an essential antecedent of emotion such that it serves both as a sufficient (thoughts are capable of generating emotions) and a necessary (i.e., emotions cannot exist without some level of thought) condition (Lazarus, 1991). In deed research has shown a strong and durable relationship between specific cognitions and specific emotions (e.g., Reisenzein & Hofmann, 1990; Smith & Lazarus, 1993). While negative emotions are contingent on the cognitive appraisal of a particular type of harm or threat, positive emotions are aroused in response to specific type of benefit (Smith, Haynes, Lazarus, & Pope, 1993). In the context of co-opetition then, managers would feel both positive and negative emotions because they encounter multiple scenarios which include beneficial outcomes as well as risks, knowledge stealth, and competitive threats (c.f. Bouncken & Kraus, 2013).

For example, the cooperative patent licensing deal between Microsoft and Asus was appraised by both firms as a beneficial agreement. One of Asus's

senior managers said, “This agreement will give us both a greater ability to innovate for our customers.” (Microsoft news Center, 2015), which implies that this cooperative endeavor between the firms triggered positive feelings. However, Asus got angry at the same time when Microsoft launched new surface book laptop in its core market. This is evident from Asus’s senior manager’s quote, “I think we are going to have a serious talk about that.” (Weinberger, 2015). Likewise, the in-depth case study of major biotechnology alliances conducted by De Rond (2003) demonstrate how clashing cognitions and ambivalent emotions emerged. Managers were both glad (“I smiled. As long as the collaboration was developing, it was a good thing, from my point of view. It meant that we not only got skills in lead optimization but also in lead discovery.”) (De Rond & Bouchikhi, 2004: 62) and furious (“Yes, but they stole from us and we hate them”) (p: 26)

Such emotional states in which both negative emotions (e.g., anger, sadness) and positive emotions (e.g., happiness, excitement) are simultaneously felt is called emotional ambivalence (Pratt & Doucet, 2000). Evidently, empirical research has demonstrated that people often feel mixed emotions (Williams & Aaker, 2002), blends of emotions (Scherer & Tannenbaum, 1986), and simultaneous conflicting emotions (Larsen, McGraw, & Cacioppo, 2001). Emotional ambivalence has also been found to prevail in co-opetition contexts (See appended paper 2). In a high emotionally ambivalent state, actors feel torn between the positive and negative conflicting impulses (Ashforth et al., 2014), which results in high tension.

From the above discussion, it follows that cognitions and emotions are inseparable (Forgas, 1995) in that they work in tandem, with cognitions preceding emotions. However, going one step further, and in line with few other emotion scholars (see Elfenbein, 2007; Pessoa, 2008), I argue that emotions in turn affect what and how we think, and therefore the connection between them is not only a one-way but rather a two-way, intertwined, and dynamic. Emotion can connect to cognition in three ways (Elfenbein, 2007). First emotion interrupts cognition by redirecting the emphasis toward itself, and thus occupying much of the cognitive capacity (e.g., Beal, Weiss, Barros, & MacDermid, 2005; Weiss & Cropanzano, 1996). Second, emotion assists cognition by helping managers to distinguish the relevant stimulus from the irrelevant as well as providing cues and information about a particular situation (e.g., Fineman, 1996; Forgas, 1995). Third, and more importantly as I argued above, cognition and emotion are intertwined, such that while thoughts generate a variety of negative and positive emotions, emotions in turn can affect the appraisals in future, resulting into new thoughts and understanding (c.f. Huy, 2010). In short, the cognitive difficulty and emotional ambivalence triggered by the co-opetition paradox would likely influence each other in a cyclic and dynamic process, which consequently

results into varying states of tension experienced by managers. The discussion so far leads me to propose that:

> Proposition 1: *The co-opetition paradox at the inter-firm level gives rise to cognitive difficulty and emotional ambivalence at the individual level when managers work with multiple and simultaneous competing demands.*

> Proposition 2: *Experienced paradoxical tension in inter-firm co-opetitive alliances develops through the continuous, cyclic, and dynamic interplay between cognitive difficulty and emotional ambivalence.*

4.2.2. Performance implications of experienced paradoxical tension

In this section, I propose that experienced paradoxical tension serves as the main underlying mechanism through which co-opetition paradox affects performance. Although, tension is typically considered to negatively influence performance, I suggest that tension can also produce positive results. More specifically, I argue that while high and low tension elicit behavioral responses of managers that likely harm performance, moderate tension would enhance performance. As discussed in the theoretical background chapter, I focus on the joint performance of co-opetitive relationships in this thesis. Joint performance includes the attainment of common objectives such as generating new customers or markets, outcompeting a third rival, enabling high quality solutions for customers by integrating each other's expertise, resources, and technologies, and thus sustaining a fruitful relationship over the desired period of time. I first discuss different degrees of tension (i.e., high, moderate, and low) and then propose how a certain degree of tension has particular consequences for behavior and ultimately for performance.

4.2.2.1. Degree of Experienced Paradoxical Tension

The potency of tension can be low, moderate, and high depending on how much managers are involved in meeting both cooperative and competitive requirements, and consequently how much they are torn between the opposite valences of cognitions and emotions. *Involvement* refers to the degree of managers' engagement, exposure, and responsibility in fulfilling the objectives of both cooperative and competitive demands, and thus illustrates their serious concern for successful co-opetitive outcomes. The more they confront both demands, the more intense they are, and the higher their

concerns for co-opetitive success, the greater would be the experienced tension. On the contrary, individuals who are either involved in cooperative or competitive tasks would experience lesser tension. This is because such individuals, by focusing their energy and efforts on a single task, are less likely to be stretched between the opposing directions. They may not even see the relationship as co-opetitive or paradoxical in nature. For instance, marketing and sales people who are typically involved in competitive strategies and tactics may only perceive other firm as a competitor (conditioned that firms are not cooperating to extend their markets). Consequently, they would experience little or no tension.[8] A recent study of co-opetition illustrates that senior managers of small and medium sized firms who were deeply involved with or closely monitored both competitive and cooperative interactions and their consequences experienced high tensions (Bengtsson & Johansson, 2014). However, despite the fact that the underlying co-opetition paradox was the same, technical staff and engineers who were typically involved in pursuing cooperation-related activities did not experience paradoxical tension, or only felt negligibly.

The experiencing of tension includes both opposing cognitions and related conflicting emotions. Thus, individuals would feel more or less tension based on how much they feel torn between the negative and positive valences of cognitions (and related emotions). To explain different degrees of tension, I draw on the similarity intensity model (SIM; Thompson et al., 1995) that can help show the extent of torn-ness. Using the idea of SIM, I propose three important degrees of tension—namely, high, moderate, and low tension—as shown in Figure 3.[9] The figure depicts positive valenced cognition-emotion on vertical axis and negative valenced cognition-emotion on horizontal axis both ranging from low to high. Using the SIM lens, I suggest that tension is a function of both similarity and intensity dimensions. Whereas the similarity dimension refers to the extent to which both positive and negative valences are alike in opposition, intensity dimension relates to how strong they are (Fong, 2006).

[8] They may experience competitive tension. However, tension in co-opetition is paradoxical, and results from pursuing competing demands simultaneously.

[9] I assume that positive cognitions and emotion go hand in hand so that events that are positively evaluated (as beneficial) trigger positive emotions and the opposite way around for negatively evaluated events (as harmful).

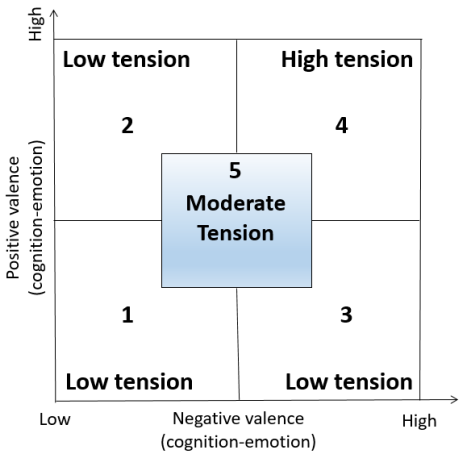

Figure 3: Different degrees of experienced paradoxical tension[10]

First, tension would be high when both the positive and negative valences of cognition-emotion are similar and intense at the same time (see box 4; Figure 3). For example, in a laboratory study, Fong and Tiedens (2002) found that women holding high status positions in organizations are prone to feel stronger tension than women in lower status positions. Such women seemed to feel very positive (i.e., pleased and happy) because they achieved the goals of obtaining higher status, power, and control. However, at the same time, they felt very negative (i.e., sad and worried) because of the social pressures to behave in a more gender-stereotypic way. Tension was higher because they were torn between the contradictory issues of power and social goals, and between conflicting emotions. Similarly, and referring back to the above argument of involvement, senior managers in co-opetitive setting would be experiencing higher levels of tension than those who mainly work with a singular demand at a time. Second, tension would be moderate when the positive and negative valences are seemingly similar and reasonably intense (box 5). Third, low tension is of two types. Box 1 represents the first type in which the valences are alike in opposition but lower in intensity levels. This implies that degree of torn-ness is negligible or weak since the intensity dimension is low. Furthermore, boxes 2 and 3 respectively represent tension states in which either positive or negative valence largely overrides the counter

[10] Figure 3 has a connection with figure 2 such that weak paradox (i.e., balanced weak, competition-dominated, or cooperation-dominated) and strong paradox (i.e., balanced strong) are related with low and high tension respectively. The appended paper 3 empirically supports this claim by showing that a strong co-opetition paradox is positively associated with high tension.

one. This also results in low tension because although the intensity level of one valence is high, the similarity dimension is substantially compromised.

The above discussion can be summarized in the following proposition:

> Proposition 3: *The degree of experienced paradoxical tension (i.e., high, moderate, low) depends on the extent to which (i) individuals are involved in pursuing both the cooperative and competitive demands simultaneously, and (ii) individuals are cognitively and emotionally torn between opposite directions.*

4.2.2.2. Consequences of Experienced Paradoxical Tension

Experienced tension is consequential because what managers think and feel influence their strategic behavior and actions (c.f. Schad et al., 2016), which in turn have implications for performance outcomes. Scholars suggest that managers are indeed powerful actors in organizations who have a strong potential to influence interfirm alliances (Wilhelm & Sydow, 2012) and their results through their strategic actions. Tension can result in both functional and dysfunctional managerial behavior. Pessoa (2008) suggests that cognitions and emotions strongly interact and jointly contribute to produce certain behavioral outcomes. Particularly, emotions and ambivalence felt by key influential managers such as the top executives ultimately result into firm taking strategic actions (e.g., Huy, 2012; Plambeck & Weber, 2009). Indeed, such actions could directly influence the pursuit of mutual goals. Thus, it is important to delineate why and when can tension be harmful or helpful for co-opetitive relationships. In this section, I propose that high and low tension deteriorates while moderate tension boosts performance. To establish this proposition, I go through each box of Figure 4 and shed light on how individuals would likely behave under each tension state (different boxes) and based on that what would be the likely consequences on alliance performance.

I begin with low tension (box 2) where an individual is only little torn between the opposite valences of cognition-emotion because the positive valences largely override the negative ones. This usually happens when individuals are primarily involved in meeting the cooperative demands and are not (or little) concerned about the competitive interactions between firms. High involvement in cooperation activities such as problem solving and co-creating successfully would likely engender strong positive cognitions and

related emotions.[11] Also, low concerns for competitive orientations would not generate much negative perceptions and feelings. Though this situation appears to be advantageous, the outcomes could be devastating. Overly trusting the partner (along with absence or lack of distrust) would likely make the focal firm vulnerable to opportunistic behavior, which can potentially lead to hurt the relationship (Lewicki, McAllister, & Bies, 1998).

For example, as I represent the case of Apple and Google in my second appended paper, both firms perceived each other as very close partners before the launch of first iPhone. The collaborative ties were so strong that Google CEO sat on the Apple's board and even used the label "AppleGoo" to informally propose a merger. In addition, both worked closely to launch the first iPhone, and many apps such as Google Maps, YouTube, and default Google search engine were developed by Google despite the fact that Apple had developed all other apps in-house ab initio. In short, the relationship was characterized by high levels of trust and strong positive cordial feelings, with little consideration on building measures to verify the trust. Ultimately, with the launch of Android operating system the closer and stronger ties tended to become weaker, as Apple CEO believed that Android was a stolen product and Google gave it for free to the manufacturers (Isaacson, 2011). Thus being overly positive (e.g., high trust) and little negative (e.g., lack of distrust) toward the partner (i.e., tipping behavior), although does not produce high paradoxical tension, but can potentially affect partnerships negatively. In addition, without having a reasonable tension, the likely chances of limited creativity (Fong, 2006), groupthink (Pouder & John, 1996), and over-embeddedness (Uzzi, 1996) would be high, as managers tend to merely focus on positive side, neglect potential risks, and thus fail to see connections between the conflicting poles.

Moving to box 3, tension is also low such that negative thoughts and feelings like distrust and ager overshadow the positive ones. Managers judge the partner as egocentric, interested in its own private gains, and thus may feel strong annoyance because of opportunistic behavior and knowledge stealth by the partner. Consider again Google-Apple example. When Android OS was launched, Apple CEO was so angry that he wanted to wage a thermonuclear war against Android and completely destroy it (Isaacson, 2011). Lack of trust and heightened distrust would thus also impact the relationship outcomes negatively. Additionally, I suggest that much of the alliances between competitors fail because the managerial focus remains too much on the competitive side and thus negative feelings. For instance, in the Ford-

[11] I acknowledge that cooperative interactions may also lead to negative cognitions-emotions. For instance, when firms fail to reach the expected common objectives or end with suboptimal results, managers would likely be angry and may "blame themselves for not being able to influence" (Vince, 2006: 352) the outcomes in a positive manner and thus feel guilt. However, in this thesis, I assume that cooperation is generally a beneficial activity for both firms.

Volkswagen strategic alliance, due to fierce and direct competition between firms, managers from each firm perceived others as enemies and did not want to share the needed knowledge related to marketing and design strategies (Park & Ungson, 2001). As a result, the alliance was dissolved prematurely. In the third form of low tension, both valences are very weak and least intense (box 1) and therefore managers would not likely be concerned about the cooperative opportunities and competitive threats, until something important happens. As this type of low tension is likely to have little impact on behavior, scholars suggest that it is typically ignored by managers (Ashforth et al., 2014). This ignorance, however, may make them either vulnerable or to miss important opportunities.

The box 4 in Figure 3 represents high tension—the difficulty and degree of torn-ness between clashing cognitions and between ambivalent emotions is quite strong, as managers are highly involved in both competitive and cooperative demands simultaneously. Scholars suggest that "an overwhelming degree of ambivalence "involves feeling "stuck", feeling powerless and unable to make decisions and to move on…" (Harrist, 2006: 89). This is because high tension exceedingly taxes individual's cognitive and emotional resources, which may lead them to get sidetracked rather than stay focused on achieving the targeted goals. Further, research suggests that such tension may lead to paralysis (Stratton, 2005), delays in decision making (Nohlen et al., 2015 cited in van Harreveld, Nohlen, & Schneider, 2015), and thus at "precisely those moments that co-opetition partners should be communicating more and addressing critical issues, the channels shut down" (Gnyawali et al., 2016: 12). For example, as the epigraph suggests, one of the co-opetitive manager under high tension expressed himself as "[s]ometimes one can feel a bit schizophrenic, like one is pulled apart. How can we handle this situation?" (p. 195).

Furthermore, Rothman (2011) in an experimental study found that the partner can read such tension, interpret it as firm's submissiveness or incompetence, and thus attempt to dominate it. This would likely generate instability in the co-opetition relationship and thus hurt alliance performance for three main reasons. First, as focal firm's managers are stuck and unable to timely participate in joint decisions under high tension, the partner firm would be making all the major decisions. This would likely not work for long because co-opetition relationships require active participation of both firms in joint decision-making. Second, and related to the first argument, the partner can exploit the focal firm to its own advantage. Third, while the submissiveness signals to the partner that focal firm is not equally competent, it also creates an impression to the focal firm that it is not being treated as an equal by the partner. These likely results into premature termination. For example, one of the main reasons behind the unplanned dissolution of Volkswagen-Suzuki partnership was that Volkswagen described Suzuki as an

"associate" in its annual report (Mukai, Hagiwara, & Kitamura, 2011) and not as an equally qualified partner.

Additionally, individuals under high tension likely react in a defensive manner such that they tend to reduce or eliminate high tension by inclining toward their preferred side (Andriopoulos & Lewis, 2009)—i.e., either to box 2 or box 3. Besides, they may indulge in escapist or avoidance behavior to reduce high tension, potentially moving to box 1. However, as described above, tension characterized by these boxes is likely dysfunctional for performance outcomes.

Finally, in the case of moderate tension (Box 5), the opposite valences of cognition and emotion are seemingly similar and reasonably intense. In other words, they are neither too weak nor too strong. Moreover, neither the positive nor the negative valence overwhelms the other. Thus tension at this level builds the necessary pressure and drive to bring out desired results by meeting the requirements of both competing demands. Managers would be able to better understand the importance of simultaneous competition and cooperation, make timely and informed decisions, and thus keep a balanced view in their daily co-opetitive endeavors. Indeed, the experimental study by Fong (2006) provides evidence that individuals that experience ambivalence have demonstrated superior ability to detect unusual associations between concepts, and hence were more creative. Other studies have also suggested that ambivalent individuals make accurate judgments (Rees, Rothman, Lehavy, & Sanchez-Burks, 2013) and therefore do a better job in enhancing alliance performance (Lewicki et al., 1998).[12] While, on the one hand tension at moderate level helps individuals to have a balanced focus on both contradictory issues, on the other hand, it helps them not to freak out under excessive cognitive and emotional loads (as is the case with high tension). Thus unlike high tension, individuals under moderate tension would have enough cognitive resources at hand to embark on the potential opportunities, as well as, to address the risks and vulnerabilities inherent in the co-opetitive process. I summarize the above discussion in the following proposition:

> Proposition 4: *Ceteris paribus, the effect of experienced paradoxical tension on alliance performance is curvilinear such that very high or low degree of tension will deteriorate performance while moderate tension will lead to higher performance.*

[12] Here I assume that the ambivalence studied by these researchers was moderate.

4.3. Management of Tension—Co-opetition capability

Most of the management strategies such as governance modes and control mechanisms discussed in section 2.6.2 appear to be quite broad and general. Although these strategies are important and needed in inter-firm co-opetitive alliances, they are limited in the present context in two main ways. First, they have largely overlooked the unique, paradoxical, and complex nature of co-opetition (with some exceptions that I draw on, below). Second, and more importantly, they fall short of explaining how the intricate nature of paradoxical tension that is experienced and felt by individual actors can be managed. In this section, I propose that managing the paradoxical tension requires three sets of capabilities— balancing, analytical, and emotional—that together form the concept of co-opetition capability. I briefly discuss these dimensions below.[13]

4.3.1. Balancing dimension

The balancing part of co-opetition capability largely draws from the literatures on ambidexterity (e.g., Andriopoulos & Lewis, 2009) and related insights from co-opetition (e.g., Fernandez et al., 2014; Gnyawali et al., 2016). Ambidexterity research suggests that organizations need to balance competing demands such as exploitation and exploration by both differentiating and integrating (e.g., Andriopoulos & Lewis, 2009; Raisch & Birkinshaw, 2008). Recent research on co-opetition further suggests that separation and integration strategies are interdependent and are simultaneously required in co-opetitive settings (Fernandez et al., 2014). I suggest that balancing capability includes developing and utilizing routines and processes that help managers to deploy, integrate, and balance the simultaneous competing demands. The routines developed for dynamic and complex co-opetitive relationships entail both the ostensive (stable) and the performative (change) aspects (Feldman & Pentland, 2003). The ostensive aspects of routines (e.g., abstract standard operating procedures) for instance, would assist managers to assign the two competing agendas to different units at the lower levels, (i.e., differentiation or separation). The performative aspect of routines (e.g., improvisation of current routines and accommodation of variations) further help to integrate and tackle the demands arising from the varying strengths of the co-opetition paradox.

4.3.2. Analytical dimension

Very recently, co-opetition scholars have proposed the concept of analytical capability which refers to "the firm's capacity to obtain a clear and accurate understanding of the co-opetition situation" (Gnyawali et al., 2016: 13). I build

[13] The appended papers 3 and 4 have conceptualized and operationalized the construct of co-opetition capability and some of its dimensions.

on this core idea and propose that the paradoxical mind-set of managers is critical because it lies at the heart of analyzing a paradoxical situation like that of co-opetition (c.f. Lundgren-Henriksson & Kock, 2016). Such a mind-set enables managers to see the constructive nature of simultaneous contradictory forces (Smith & Tushman, 2005) inherent in co-opetition paradox. It encourages "exploring the tension in a creative way that captures both extremes" (Eisenhardt, 2000: 703) rather than tipping toward either the competitive or the cooperative side of co-opetition. Managers with paradoxical mind-set tend to be skilled at developing a clear, precise, and a holistic understanding of the co-opetitive demands and resultant tensions. They tend to be comfortable in understanding why and how the contradictions are important and beneficial.

4.3.3. Emotional dimension

The emotional dimension of co-opetition capability is specifically tailored for managing emotional ambivalence. I draw from the emotion literature, particularly related to emotional intelligence (Mayer et al., 2004) to develop this concept. I define emotional capability as the ability to accept, understand, and regulate ambivalent emotions and their effects.[14] Although emotion literature has largely focused on managing single or discrete emotions such as anger, the insights can be further developed to address emotional ambivalence. *Acceptance* means embracing both negative and positive emotions because they provide different cues about a particular situation and how to interpret it, which likely leads to gain better understanding. *Understanding* refers to the ability to make sense of why simultaneous positive and negative emotions like trust and distrust arise, and what would be the consequence if one or both emotions are avoided (e.g., Mayer et al., 2004)

Regulation of ambivalence involves two strategies—surface acting and deep acting (Grandey, 2000; Hochschild, 1983). Surface acting involves an outward display of emotions that although are not actually felt but are needed in a particular situation. For instance, an airhostess would bring a smile on her face even if she were tired and angry with some passenger. Deep acting is about displaying emotions that are genuinely felt. For deep acting, managers may need to do reappraisal of situations to modify their inner feelings.

4.3.3.1. The Moderating Role of Co-opetition Capability

The three dimensions of co-opetition capability overlap, intertwine, and reinforce each other, and therefore collectively contribute to managing the

[14] Emotional capability is highly related with and reinforced by the analytical capability. In fact, all dimensions overlap and produce a joint effect on managing experienced paradoxical tension.

paradoxical tension. For instance, whereas the analytical dimension typically addresses how accepting contradictions and acknowledging their constructive nature is essential for success, it simultaneously plays a critical role with the emotional capability in accepting ambivalent emotions and how they help in providing critical cues (which I explain below). The theoretical model (Figure 1) depicts a dual role of co-opetition capability. In its first role, co-opetition capability moderates the relationship between co-opetition paradox and experienced tension. The balancing and analytical dimensions, in particular, interact with each other to play the key role here.

The balancing capability is a firm-level construct, and consists of routines that help separate, integrate, and balance the competing demands. The ostensive aspects of routines assist managers in the differentiation process in which managers assign cooperative and competitive tasks to different units or members of the organization. Doing so would inhabit the development of tension at lower levels such that each unit can reach its goals easily and quickly without wasting unnecessary time, energy, and resources to cope with high tensions. It is also better that only fewer individuals such as top executives experience high tension because most likely they would have (or ought to have) a paradoxical mind-set and valuable experience dealing with simultaneous competing demands. Differentiation, however, also creates the need to integrate and balance the competing demands so that their energized potential can be tapped. To achieve this goal, firms improvise the current routines of integration by introducing specific changes in specific times and occasions. Thus the performative aspect of routines help managers develop alternative strategies to address the complex and changing demands (Eisenhardt, Furr, & Bingham, 2010) and accordingly alter the scope and content of the relationship (Mom, Van Den Bosch, & Volberda, 2009) without jeopardizing the pursuit of common objectives.

The analytical capability provides managers with a critical lens through which they scan the internal and external environments to identify the need for co-opetition. Identifying and selecting the right firm for co-opetition, as well as, doing it at the right time are very crucial. For instance, allying with a competitor that is short-term oriented in time when the focal firm seeks to build a long-term relationship to pursue a particular objective, is likely to result in disappointing results (c.f. Das & Teng, 2000). The analytical capability further helps firms recognize the suitable areas in which to cooperate and compete. Overall, it gives a proper assessment of why, how, and when it is advantageous to both cooperate and compete.

More importantly, analytical capability would affect how managers perceive and appraise the co-opetition paradox, which in turn would determine the degree of tension experienced by them. For instance, if managers perceive the paradox as overly cooperation dominated or competition dominated, the resultant tension would be low, which would

negatively impact the joint performance. However, even if managers are mainly involved in either cooperation or competition, a paradoxical mind-set would allow them to both set distinctions and identify associations (Smith & Tushman, 2005) between cooperation and competition. Although such juxtaposition would also spur tension, under the conditions of paradoxical mind-set (i.e., analytical capability) such tension would be moderate. Further, if managers are highly involved in pursuit of both competing demands and consequently experience high tension (box 4; fig. 4), a high level of analytical capability would increase their cognitive capacity such that managers would be able to "broaden the scope of their attentional span to attend to divergent perspectives but also to engage in a balanced consideration of those perspectives" (Rothman & Melwani, 2016: 13). In a co-opetitive context, I argue that high analytical capability would help managers to respectively bring up and down the low and high tension to a moderate level, and therefore leverage the potential of competing demands by approaching them as opportunities to enhance performance outcomes.

Thus, whereas the analytical dimension of co-opetition capability enables managers to keep tension at a moderate level, the balancing capability would help prevent the development of tension at lower levels, as well as, help managers to balance the competing demands by changing scope and content of the co-opetitive relationship. Both capabilities thus interact with each other to jointly influence the effects of co-opetition paradox on tension. Hence, I propose the following:

> Proposition 5: *Co-opetition capability positively moderates the relationship between the co-opetition paradox and tension primarily through the interaction of analytical and balancing capability. The stronger the co-opetition capability is, the more moderate would be the tension experienced by managers.*

In its second role, co-opetition capability moderates the relationship between tension and performance. As managing emotions also requires managing cognitive appraisals (that give rise to emotions), the role of analytical capability along with emotional capability becomes critical. Emotional capability enables managers to accept and understand the existence and significance of positive and negative emotions. This is critically important because emotions provide cues about certain situations. For example, in an experimental study Fong (2006) demonstrates that people feeling emotional ambivalence interpret such emotions as a signal of being in an unusual environment. Such signals push them to collect more information to find associations between unrelated stimuli, which in turn lead to increased creativity. Thus if emotions are ignored or suppressed, managers would likely

miss important cues (Seo & Barrett, 2007). Partners tend to observe each other for cues as soon as they enter into the alliance. If they do not interpret emotional cues correctly, the business may go into trouble. For instance, as described by Williams (2007), a management consultant lost his business with an important client because the consultant failed to interpret client's frustration.

In relation to above, as individuals monitor each other's emotional expressions for cues, it follows that they need to regulate their emotional expressions. Emotional capability allows them to do so through surface acting and deep acting. Surface acting becomes acutely important under situations in which individuals feel strong ambivalent emotions (i.e., high tension). As already discussed, such expressions lead the partner to draw negative inferences such as incompetence, indecisiveness, and submissiveness, which in turn increases the chances of break up. Therefore, by controlling the display of emotions, managers could send a strong signal to the partner that their firm is competent enough to create win-win results. However, surface acting must only be a temporary act. Surface acting on a long term basis may create burnout signs like emotional exhaustion, depersonalization, and diminished personal accomplishment (Cordes & Dougherty, 1993). More importantly, it needs to be underpinned by deep acting, which involves reappraisals of situations. Meanwhile, deep acting would further allow managers to meet the required deficiencies of their firm so that their displayed emotions match their actual feelings. As a result of improving its deficient skills, the focal firm would be able to generate superior results along with the partner firm.

The analytical capability works side by side with the emotional capability, as much of the essential elements of the former like acceptance, understanding, and deep acting for instance, also require a paradoxical mind-set. In short, the analytical and emotional dimensions of the co-opetition capability would, in particular, positively influence the effects of tension on alliance performance, such that it would strengthen the positive effects and weaken the negative ones. Accordingly, I propose:

> Proposition 6: *Co-opetition capability positively moderates the relationship between tension and alliance performance primarily through the interaction of analytical and emotional capability. The stronger the co-opetition capability is, the weakened and strengthened would be the negative and positive relationship between tension and performance respectively.*

5. Summary of Papers

A paper-based thesis is argued to show how different papers fit together to make a coherent whole (kappa). In this chapter, therefore, I first present all four appended papers in figure 4 to illustrate how they relate to one another and bind together in this thesis. I then present an extended abstract of each appended paper.

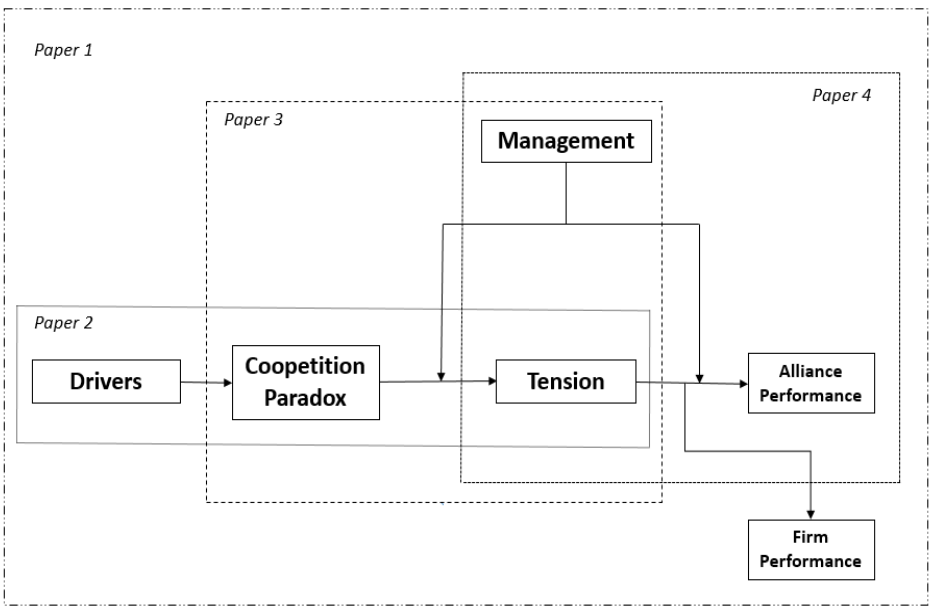

Figure 4: All appended papers bound together

5.1. Extended Abstract, Paper 1

Bengtsson, M., & Raza-Ullah, T. 2016. A systematic review of research on co-opetition: Toward a multilevel understanding.

The field of co-opetition research has grown significantly since the publication of Brandenburger and Nalebuff's (1996) book and seminal work done on the topic (e.g., Bengtsson & Kock, 1999; 2000; Dowling et al., 1996; Lado et al., 1997). However, the field has remained quite fragmented such that many concepts are underdeveloped, and little work explains the multi-level nature of co-opetition. More importantly, previous research has not developed an overarching theory of co-opetition that explain how co-opetition arises, what happens during the process at and across different levels, and what are

the implications and managerial concerns. This paper is illustrated by the outermost box in figure 4, and provides an overarching framework (based on the identified themes and important issues in the literature) for this thesis such that all other papers fit quite neatly in it. In this paper, we did a systematic review of the field of co-opetition to address such issues. We used two accredited databases, EBSCO host business source premier and ISI web of science (SSCI) and found 593 articles initially. After going through the set criteria of screening, a final set of 142 articles was selected.

We first carefully and thoroughly analyzed how the concept of co-opetition has been defined and conceptualized at different levels. We systematize these conceptualizations with respect to levels into two schools of thought, which we named as the activity and the actor schools of thought. In the next step, we identified major critical themes of co-opetition and developed a framework of drivers, process, and outcomes, which we called as the DPO framework. Our review dictated that similar drivers and outcomes were used in both schools; however, the process part is different in each school. Then we developed an overarching and dynamic model that synthesized the actor and activity schools of thought with the DPO framework. Doing so allowed us to determine a new school of thought, the blended school, which suggests that co-opetition in a broader sense is at least a two level phenomena involving direct cooperative-competitive relationships (with sublevels of triadic and dyadic levels) and co-opetition context (with network and inter-network levels). The developed model suggests how the co-opetition phenomena at one level of analysis are distinct (although interlinked) from co-opetition at other levels. This in turn provided a more complete and a richer understanding of co-opetition. Finally, we highlighted few weaknesses of the literature related to conceptual clarity, coherence, rigor, as well as, methodological concerns. We also shed light on how the weaknesses could be transformed into strength and lay down a brief agenda for future research.

5.2. Extended Abstract, Paper 2

Raza-Ullah, T., Bengtsson, M., & Kock, S. 2014. The co-opetition paradox and tension in co-opetition at multiple levels.

The existing literature on co-opetition, despite acknowledging that co-opetition is a paradox and that tension is an integral part of co-opetition relationships, lacks substantial understanding on how this paradox materializes, what is the nature of this paradox, and what kind of tension it triggers. Therefore, we address these gaps by (i) looking into the forces that materialize the paradox of cooperation and competition between firms, (ii) dissecting the anatomy of this paradox to discover the dynamics of its external and internal boundaries, and their impact on the sustenance or the dissolution

of the paradox, and, (iii) exploring the existence of simultaneous conflicting emotions at different levels that underlie tension (see figure 4).

First, with Sony-Samsung example (fierce competitors that collaborated), we demonstrate that several unifying forces in the co-opetition context enact the external boundary of the paradox, while the existing diverging forces to compete remain and create the internal boundaries of the co-opetition paradox. With Apple-Google example (close partners that started to compete), we explicate that several diverging forces formed internal boundaries by creating distance between both firms and finally both started to see each other more as competitors than partners.

Second, we discuss the interplay between both boundaries that how the external boundary exerts force to decrease the distance between the internal boundaries (that emphasize division) and in turn the internal boundaries strive to break the external boundary (that emphasizes integration). We propose that if the external boundary becomes either too weak or too strong in relation to the internal boundaries, the co-opetition paradox will likely dissolve. For a paradox to exist and continue, both the external and the internal boundaries need to exist simultaneously.

Third, we note that the prior literature treats paradox and tension in a similar manner without making a distinction between both. Furthermore, the literature on co-opetition has overlooked the importance of emotions and particularly the criticality of simultaneous conflicting emotions. With the help of two more exemplary cases Skega-Trellex and Permanova-Rofin Sinar, each from a different co-opetition context, we elucidate that when actors involved in co-opetition cognitively evaluate the paradox, they experience both negative and positive emotions simultaneously (known as emotional ambivalence) at multiple levels. As the cases reveal that several actors felt torn between the conflicting impulses when they were highly involved in both cooperative and competitive activities simultaneously, we establish that this feeling of torn-ness underlies tension in co-opetition. Thus, we differentiate paradox from tension such that paradox is an inter-firm level phenomenon and tension is felt at individual level. We further suggest different degrees of emotional ambivalence (high, moderate, low) with respect to different levels and contexts of co-opetition.

5.3. Extended Abstract, Paper 3

Bengtsson, M., Raza-Ullah, T., & Vanyushyn, V. 2016. The co-opetition paradox and tension: The moderating role of co-opetition capability.

In this article, we develop and test a theoretical framework that explains the relationships between co-opetition paradox and tensions under the contingency of co-opetition capability. We hypothesize that higher (lower)

intensity of the paradox leads to experience of strong (lower) external tension and that experience of this tension in turn leads to the awareness of internal tension. Further, we postulate that firms with high co-opetition capability report a moderate level of external tension and lower levels of internal tension. External tension is operationalized as the cognitive difficulty experienced by senior managers of the focal firm as a result of working with both cooperative and competitive demands simultaneously. Internal tension refers to the tension and frustration that develops at the unit level due to co-opetition engagement.

We used the data from a multi-industry representative survey of 1,532 firms in Sweden to test these hypotheses. Our results confirm the hypothesized relationships in the model. The findings show that the co-opetition paradox is positively associated with external tension, which in turn, is positively associated with internal tension, Further the co-opetition capability plays a dual role such that it positively moderates the relationship between co-opetition paradox and external tension, as well as, negatively associates with internal tension development. We advance and operationalize the concept of co-opetition capability, defined as "the ability to think paradoxically and to initiate processes in order to create and maintain a moderate balance in the relationship". We further contribute by showing that co-opetition capability is essential to manage both external and internal tensions in co-opetition relationships particularly because co-opetition is a paradox and thus a unique and complex phenomenon. In this regard, our results show that co-opetition capability is distinct from other general capabilities such as networking capability and absorptive capacity. This further implies that co-opetition capability is a must-have capability to manage the unique and complex paradoxical phenomenon of co-opetition and resultant tensions.

5.4. Extended Abstract, Paper 4

Raza-Ullah, T. 2017. Emotions…really? The role of emotional ambivalence in explaining paradoxical tension–performance relationship in co-opetition alliances: Examining a moderated mediation model

In this paper, I first developed a theoretical model that suggests that emotional ambivalence mediates between the cognitive paradoxical tension and alliance performance. The model further theorizes that the ambivalence response of acceptance and balancing capability positively moderate this mediated relationship. As most of the previous studies have suggested that tension leads to diminished performance, I develop and test a new model to suggest why, how, and when tension effects the alliance performance negatively. The paper exclusively takes into account the ignored but impactful

role of emotional ambivalence that develops because of cognitive tension and in turn affects performance negatively. Like the appended paper 3, the cognitive tension was measured as the difficulty experienced by managers to deal with simultaneous competing demands, albeit with slightly different items. Emotional ambivalence was measured by asking respondents to indicate if they feel both positive and negative emotions, whether they feel torn between them, and so on.

Specifically, I hypothesize that emotional ambivalence mediates the negative relationship between cognitive tension and performance. Furthermore, I posit that the managerial response of acceptance and firm's balancing capability would moderate the mediated effect of emotional ambivalence on performance. I test the hypotheses on 209 dyadic co-opetitive alliances of Swedish firms. The results show full mediation of emotional ambivalence, and a positive moderating role of balancing capability. Thus, emotional ambivalence is found to be a very powerful mechanism that explains how and why cognitive tension leads to diminished performance. However, unexpectedly, the acceptance response negatively moderates the link between emotional ambivalence and performance. Nevertheless, an interesting finding from the moderated-mediation analysis emerged suggesting that the acceptance response is a prerequisite for the balancing capability to function. The moderators are most effective when acceptance response is lower than the balancing capability.

6. Discussion

In this thesis, I have built on and extended the key insights of the paradox, ambidexterity, and emotion literatures to develop a theoretical framework in which experienced paradoxical tension triggered by the co-opetition paradox enhances performance outcomes under the contingency of co-opetition capability. First, I drew on the paradox theory (Lewis, 2000; Smith & Lewis, 2011) to delineate that co-opetition is an inter-firm paradox that juxtaposes the contradictory yet interrelated elements of cooperation and competition simultaneously. I further suggested that the experienced paradoxical tension—the difficulty experienced by managers as they cognitively and emotionally feel torn between opposing directions—arises when they work with multiple, simultaneously contradicting, and challenging demands of co-opetition. I applied the cognitive appraisal theory of emotion (Lazarus, 1991; Plutchik, 1994) to explain how both positive and negative emotions are felt by managers simultaneously (i.e., emotional ambivalence), and further shed light on how cognitive difficulty and emotional ambivalence interact to shape tension.

I also analyzed the different degrees of tension (i.e., low, moderate, and high) by using the similarity-intensity model (SIM; Thompson, Zanna, & Griffin, 1995), and explicated how the moderate degree of tension helps while the others could hurt the achievement of performance goals. Meanwhile, I brought into play the critical role of managerial behavior, which largely depends on the intensity of tension in influencing the performance objectives. The theoretical framework further required borrowing from the literature on ambidexterity (Andriopoulos & Lewis, 2009; Raisch & Birkinshaw, 2008) in addition to the paradox and emotion literatures to develop the multidimensional construct of co-opetition capability. I proposed that co-opetition capability includes three dimensions—namely analytical (i.e., paradoxical thinking), balancing (i.e., separation and integration routines), and emotional (i.e., accepting and regulating emotions)—and helps firms harness the power of paradoxical tension to enhance alliance performance. I integrate the core insights from co-opetition literature to suggest the analytical (Gnyawali, Madhavan, He, & Bengtsson, 2016) and balancing (Fernandez, Le Roy, & Gnyawali, 2014) dimensions of capability. I further add the emotional capability dimension, which specifically addresses the emotional aspects of paradoxical tension. I test some parts of the theoretical model in the appended papers to further show that the theory holds in practice.

This theory contributes to a better understanding of the nature and consequential role of experienced paradoxical tension in explaining how and why co-opetition paradox affects performance in co-opetitive alliances. It

further highlights the must-have role of the required multi-dimensional co-opetition capability to help boost performance in such alliances. I expand on the contributions below.

6.1. Theoretical Contributions

By developing a theory of experienced paradoxical tension in the context of co-opetitive alliances, I contribute in several ways. First, I develop a theoretical framework that directly addresses the microfoundations of paradoxical tension and thus answer the recent calls made to explore individual approaches to paradoxical tension (Bengtsson & Kock, 2014; Schad et al., 2016). I provide a nuanced understanding of how experienced paradoxical tension at an individual level develops in the context of co-opetitive alliances by bringing cognitions, emotions and their interplay to the foreground. More specifically, I contribute by providing novel insights into the nature of paradoxical tension. I suggest that tension is essentially an individual level phenomenon that comprises cognitive difficulty and emotional ambivalence. Cognitive difficulty develops as a result of pursuing multiple and simultaneous competing demands, and emotional ambivalence develops through ongoing cognitive appraisals of several beneficial and threatening scenarios that managers often confront in the context of co-opetitive alliances. Paradoxical tension thus refers to an experiencing state in which managers are cognitively and emotionally torn between opposite directions. By conceptualizing paradoxical tension as an experienced state of managers, I also clarify the distinction between paradox (or co-opetition) and tension, as extant literature often confounds these terms by using them interchangeably. In doing so, I further establish that co-opetition is a paradox that exists at the inter-firm level, and materializes when two competitor firms start to cooperate while still competing or when two partner firms begin to compete alongside cooperation. Thus by approaching tension from the micro-foundation individual level lens, I provide conceptual clarity between paradox (i.e., co-opetition an inter-firm level phenomenon) and paradoxical tension (i.e., an individual level cognitive-emotional construct).

I have established such distinction, and the cognitive difficulty and emotional ambivalence aspects of experienced tension in three of the appended papers. For example, the third paper, based on a quantitative study of 1,532 firms, tests and supports the claim that co-opetition paradox stands as a major source of paradoxical tension. Co-opetition paradox pressurizes managers to pursue simultaneously the contradictory demands inherent in co-opetition such as cooperating and competing, creating and appropriating value, and reconciling conflicting economic interests between firms. This paper has operationalized tension as cognitive difficulty experienced by managers as they work with these competing demands. The findings show that a stronger paradox leads to high levels of cognitive difficulty. Similarly, the

second paper based on several illustrative/exemplar cases, sheds light on how co-opetition paradox serves as an antecedent of experienced paradoxical tension (conceptualized as emotional ambivalence in this paper). This paper maintains that when co-opetition paradox materializes (between competitors or between partners), actors begin to cognitively evaluate the consequences (e.g., beneficial and harmful) that the co-opetitive situation brings to their personal and firm's wellbeing. Consequently, actors feel both positive and negative emotions or emotional ambivalence, as co-opetitive situation encompasses both beneficial (triggering positive emotions) and threatening events (triggering negative emotions). The fourth paper, based on 209 firms involved in co-opetitive alliances, finds additional empirical support suggesting that cognitive difficulty is positively and significantly associated with emotional ambivalence. This further implies that cognitive difficulty and emotional ambivalence have a close connection as suggested in chapter 4. Together, these papers contribute to better understanding that co-opetition paradox and tension are two distinct phenomena such that the former materializes at an inter-firm level and stands as a source of the latter, which essentially is an individual level phenomenon. Thus, proposition 1 seems to hold in the context of co-opetitive alliances. Proposition 2, as partly tested in fourth paper also seems to hold. However, the interplay between cognitive difficulty and emotional ambivalence clearly needs future research.

Second, the theory developed in this thesis contributes by addressing the mechanisms or the missing links between co-opetition and performance, that in turn, provide critical insights into how and why co-opetitive alliances perform above or below par. This is a novel contrition. Prior research on co-opetition as yet not delved into how paradoxical tension develops through cognitive and emotional interplays and therefore inform us little about its differential consequences on performance. Although paradox research has taken initial steps to address the microfoundations of experienced paradoxical tension and its potential to cause both positive and negative consequences (Miron-Spektor, Ingram, Keller, Smith, & Lewis, in press), my theory provides a nuanced understanding of why and when tension can be destructive or constructive. More specifically, I dig deep into the different states of experienced tension (i.e., low, moderate, and high) and argue that whereas high and low tension lead to managerial behaviors that negatively influence performance, experience of moderate tension allows managers to positively influence performance in co-opetitive alliances. Thus, experienced paradoxical tension serves as one of the main and powerful underlying mechanisms that links co-opetition paradox with performance. In the appended paper 4, I empirically test some of these assumptions. I found support for the claim that high experienced paradoxical tension leads to declined performance, as cognitive difficulty and emotional ambivalence in this paper were negatively related to performance in co-opetitive alliances.

This means that the tested part of proposition 4 in paper 4 seems to hold in practice—that is, high experienced tension is negatively related to alliance performance.

Third, I advance the existing knowledge of the required management capability (i.e., the second missing link that plays a moderating role) that could help mitigate the negative effects of paradoxical tension on performance and thus tap the positive energy of co-opetition paradox. I propose a multidimensional construct of co-opetition capability. In essence, I explicate how co-opetition capability plays a dual moderating role such that it moderates co-opetition's effect on tension, as well as, tension's influence on performance. The theory helps explain the nuances involved in the interplays between balancing capability and analytical capability, and between analytical capability and emotional capability, and thus how co-opetition capability overall plays a dual role. The role of co-opetition capability has been analyzed in the third and fourth appended papers. For instance, in the third paper, co-opetition capability positively moderates the relationship between co-opetition paradox and cognitive tension. The results indicate that firms with higher capability report a moderate level of tension even when co-opetition paradox is strong. As suggested here, the moderate level of tension positively contributes to alliance success. In the fourth paper, I particularly focused on the balancing and the emotional dimensions of co-opetition capability. I found a positive moderation of balancing capability; however, the emotional capability (operationalized as acceptance response in this paper) has a negative moderation effect on the relationship between emotional ambivalence and performance. The main reason for the negative moderation could be that the construct of emotional capability did not include items related to the regulation component (as suggested in the theoretical model of this thesis). Thus, merely understanding or accepting ambivalent emotions may not help, as it lacks the action part, which may be complemented by emotional regulation.

Besides contributing to the co-opetition and inter-firm alliance literature, as implied in the above discussion, this theory also contributes to the paradox literature. It identifies co-opetition as a new, important, and powerful paradox that manifests at an inter-firm level. As research on inter-firm level paradoxes is scarce, this theory offers novel insights into how does a paradox materializes across organizational boundaries, and what are its likely effects on the success of the alliance. Paradox literature may also benefit from the distinction made between paradox and paradoxical tension in this thesis to explore tension beyond something that denotes a paradox. The discussion on the underlying constituents of tension—cognitions, emotions, and their interplay—is especially relevant to further advance the microfoundations of experienced paradoxical tension. The theory further contributes to the literature on emotion by looking at the critical importance and implication of emotions in

a new context of co-opetitive alliances. By doing so, it responds to future calls urging to explore emotions in inter-firm strategic contexts (Huy, 2012) and to uncover sources and implications of emotional ambivalence (Fong, 2006; Lewicki, McAllister, & Bies, 1998; Pratt & Doucet, 2000). The theory, in particular, offers fruitful insights into how and when emotional ambivalence and cognitive difficulty leave positive or negative effects on performance. These insights add to current debate in this literature related to whether emotional ambivalence helps or hurts behavioral outcomes (e.g., Fong, 2006; Harrist, 2006) and thus performance. Overall, I contribute by developing a much-needed theory of paradoxical tension in co-opetitive alliances that addresses the core issues of: what is paradoxical tension, where does it come from, what does it do, and how can it be harnessed.

6.2. Practical Implications

The theory developed in this thesis also has a practical value for managers and firms that get involved in co-opetitive alliances. The theory is particularly relevant to key managers who are mainly involved in or are responsible for the successful pursuit of simultaneous cooperation and competition between firms. First, managers need to be mindful of the critical role played by the experienced paradoxical tension. My theory suggests that while very high or low tension may lead to behaviors that likely harm performance, a moderate level of tension would likely enhance performance in co-opetitive alliance. For instance, under high tension when managers experience excessive cognitive load and emotional torn-ness, they are likely to get stuck, less creative, and even paralyzed as expressed by one manager in the epigraph. Under this state, they would not be able to do much to boost performance. Some managers may get defensive in that they tend to tip toward their favored pole to decrease the intensity of tension.

However, low tension, as suggested by the proposed theory is also counter productive. For instance, if managers begin to get very close to the partner, and overly trust it without distrust, the consequences can be alarming. The partner may get access to the sensitive knowledge and technologies, exploit them to its own advantage, or become a potential competitor, as happened in the case of Apple and Google alliance. Also, strong negative orientation toward the partner and not seeing the potential opportunities and benefits of working with it, although reduces the degree of torn-ness, yet proves dysfunctional for performance. The theory further suggests that a moderate level of tension in which managers can likely make balanced appraisals, trust but verify it, and honor both orientations as both are considered vital, fuels performance outcomes.

Second, firms need to develop specific management capability to keep experienced paradoxical tension at a moderate level. Such capability, as suggested in this thesis, is different from general alliance management

capabilities, and is specifically tailored to manage the complex and intricate nature of experienced paradoxical tension. I call it co-opetition capability and suggest that it has three important and interrelated dimensions. The analytical dimension enables managers to think paradoxically, become comfortable and energized with pursuing competing demands, and thus avoid defensive behaviors such as tipping. The balancing dimension via its separation and integration routines prevents formation of paradoxical tension at the lower levels, and the emotional capability enables managers to accept, understand, and regulate emotional ambivalence. Together, these dimensions, help managers to maintain a moderate level of tension such that performance is enhanced. Thus along with other alliance management capabilities, managers need to build co-opetition capability, as it is essential for successful puruit of co-opetitive performance objectives.

6.3. Limitations and Future Directions

I would like to highlight some of the limitations of this thesis and specify future research opportunities. First, while my focus on the focal firm is a clear strength allowing me to fine grain the theorizing, I did not explicitly incorporate the perspective of the other firm involved in the co-opetitive alliance. Future research could explore the perspectives of both firms and develop a more complete understanding of how co-opetition paradox creates tension for both firms and what would be tension's effect on performance in such a case. It may be possible that one firm perceives that the intended outcomes of the alliance are achieved, but at the same time, the other firm may realize that the alliance has not met the expected outcomes. Also, it would be important to explore what happens when one firm has a balancing capability and the partner has not? How is this scenario different from the one in which both firms have a capability or both lack it? I suggest that future research should theorize about these scenarios in order to complete the logic.

Second, the theoretical model is dynamic (see figure 1) such that while co-opetition paradox affects experienced tension, experienced tension in turn affects the cooperative and competitive interactions between firms. Similarly, performance has a backward loop to co-opetition paradox and experienced tension. Moreover, cognitive difficulty and emotional ambivalence both affect and are affected by each other. However, in the appended papers only one-way effects have been tested. Future research should conduct longitudinal and in-depth case studies to empirically explore the nuances, interplays, and dynamic processes depicted in the model. Relatedly, future research should further develop the capability dimensions and especially how they interact with each other to produce a combined moderation effect.

Third, the appended papers have not tested the whole model, rather few parts of it are tested as discussed above. More empirical studies are need to support or falsify the theory (or parts of it) presented in this thesis.

6.4. Conclusion

To conclude, this thesis develops a theory that explicates the nature, source, consequence, and management of experienced paradoxical tension in co-opetitive alliances. The theory suggests that experienced paradoxical tension comprises cognitive difficulty and emotional ambivalence, and develops when managers work with multiple competing demands of co-opetition paradox, as well as appraise the consequences of several beneficial and threatening situations in co-opetitive settings. This individual level experienced tension plays a central role in explaining why and how co-opetitive alliances perform below or above par. More specifically, moderate level of tension leads to functional while high and low states of tension lead to dysfunctional managerial behavior, which in turn and accordingly, affect the performance of these alliances. The theory further emphasizes the critical moderating role of co-opetition capability that helps managers experiencing paradoxical tension to maintain a moderate level of tension, thereby harnessing its positive energy.

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