Internal Coopetition as a Driver For Organizational Learning
An empirical explorative study on internal coopetition and tensions in a high-tech firm

Author: Rinse Jacobs

Supervisor: Maria Bengtsson

Student
Umeå School of Business and Economics
Autumn Semester 2014
Master thesis, one-year, 15 hp
ACKNOWLEDGEMENTS

Looking back at my time at the Umea University and specifically during the writing of my thesis, a couple people stand out for their unforgiving support and insights on an academic and professional level. Through this acknowledgement I wish to express my deepest respect and say thank you for enabling to write and undertake research throughout the year.

During the time of writing, I have undergone enormous change in an academic aspect, but also in an professional and social aspect. The growth in my academic experience is attributable to Maria Bengtsson, my supervisor. She continuously explained theories while guiding me in finalizing this thesis. Maria, thank you!

Additionally, I have seen a shift in my professional experience. Having been allowed to extract data from the company is a true blessing. This has helped me to gain a more complete understanding of the dynamics of the technology company and (re)establish friendships along the way. Friends and employees, thank you!

Perhaps the biggest change for me during this period is becoming a dad of a wonderful healthy baby girl. Countless times she provided me the much needed distraction and laughter with her smiles and funny faces. But most of all, none of this would have been possible without my loving, caring, and supportive wife, Gabriela Nicole Mayorga Martinez, Nicole for short. She picked me up when I couldn’t see the end and lent me her shoulder to lean on in critical times. Mila and Nicole, thank you!
SUMMARY
Coopetition, the joint occurrence of competition and cooperation between two actors on more than one activity is an emerging topic of research. As Bengtsson and Kock (2014) mentioned, there is an exponential increase in published papers that tackle the problems and opportunities surrounding coopetition. Coopetition as a phenomenon has received an increased attention since Raymond Noorda, CEO and founder of Novell, first introduced the concept in the 1980s (Luo, 2007). Though, not only has the academic realm seen an increase, the business world has moved towards a more cooperative identity in relation to their competitors. Where partnerships used to be looked upon as second best solution (Beamish, 1988), it is now changing rapidly with the increase of joint ventures and other forms of partnerships (Pastor & Sandonis, 2002, p. 245).

Nevertheless, coopetition within the boundaries of the firm has been discussed rarely. A mere five articles (Bengtsson et al., 2013) have attempted to cover coopetition on an intra-organizational level. This results in many remaining gaps for this niche of coopetition literature. It has been argued that internal coopetition is important for knowledge sharing and creation (Tsai, 2002). This implicitly implies there is an organizational learning effect linked to internal coopetition, but this has not been studied explicitly. Through this study I offer an unprecedented explorative study on internal coopetition in relation to organizational learning. Additionally, I will adapt proven models from the coopetition’s inter-organizational level theories to the relatively under explored intra-organizational level. Therefore, my model will include coopetition intensity (Luo et al., 2006), tensions (Bengtsson et al., 2014), coopetition capabilities (Bengtsson & Raza-Ullah, 2014; Raza-Ullah et al., 2014), and organizational learning.

This empirically explorative study uses data extracted from an established Asian high-technology company. With 61 respondents ranging from regular employees to top management, correlation and regression analyses have been conducted to draw conclusions about the role of internal coopetition for learning within organizations based upon the previously mentioned variables.

The results show that coopetition intensity creates and increases internal tensions significantly. Thus, the inter-organizational tensions theory on coopetition can be used on an intra-organizational level, too. The coopetition intensity has a direct significant positive effect on the increase of organizational learning. Furthermore, the internal tensions, as expected based on previous literature, lower the coopetition intensity’s effect on organizational learning. It should be mentioned that this effect was not significant, yet I believe this result to be note-worthy for future studies. Interestingly, the coopetition capability with managerial ambidexterity on the forefront failed to show a mediating relationship between internal tensions and organizational learning. This might be due to wrong Likert scales or because managerial ambidexterity is not a big factor for intra-organizational coopetition.

In conclusion, parts of the inter-organizational theory on coopetition can be adapted and used in an intra-organizational framework. Though more importantly, it is proven that in order to increase organizational learning from within the company, the coopetition intensity should be maintained on high levels.
INDEX

1. INTRODUCTION 2
1.1 Coopetition – A paradoxical relationship between firms 2
1.2 Purpose 7
1.3 Disposition of the thesis 8

2. THEORETICAL FRAMEWORK 10
2.1 Definition of coopetition 10
2.2 Model Building 15
   Coopetition Intensity 16
   Cooperation 16
   Competition 18
   What Is Tension? 19
   Organizational learning 21
   Tension and Organizational Learning 23
   Coopetition Capabilities and Tension and Organizational Learning 24

3. METHODOLOGY 26
3.1 Research Paradigm 26
3.2 Epistemology 27
3.3 Research Approach 29
   Deductive 29
   Inductive 30
   Quantitative or Qualitative 31
3.4 Research Strategy 32
3.5 Sampling selection 32
3.6 Survey Development 33
   Construct 1 - Coopetition Intensity (independent) 33
   Construct 2 - Internal Tensions (dependent) 34
   Construct 3 - Coopetition Capabilities (independent) 34
   Construct 4 - Organizational Learning (dependent) 35
   Control variables 35
3.7 Analysis Methods 35

4. RESULTS 38
4.1 Descriptive Results 38
4.2 Results Statements

4.3 Correlation Matrix

4.4 Regression Analyses
   Simple Linear Regression
   Multiple Regression Analysis

5. DISCUSSION
   Adoptability of inter-organizational coopetition models
   Explorative Nature

6. CONCLUSION

6.1 Research question(s) & Hypotheses
   Question 2
   Question 3

6.2 Managerial advice

6.3 Limitations

REFERENCES

APPENDICES

Appendix 1: Measured items
Appendix 2: Correlation Matrix + Control Variables
Appendix 3: Simple Linear Regression Model Summary + ANOVA
Appendix 4: Second Simple Linear Regression Model Summary + ANOVA
Appendix 5: Multiple Regression Analysis Model Summary + ANOVA
Appendix 6: Scatter Plots for Descriptive Results
LIST OF FIGURES

FIGURE 1: COOPETITION SLIDER. SLIDER CAN ONLY MOVE OVER ITS X-AXIS. 11
FIGURE 2: ADAPTED COOPETITION MATRIX (RAZA-ULLA ET AL., 2014) 12
FIGURE 3: COOPETITION ARTICLES DISTRIBUTION 13
FIGURE 4: RESEARCH MODEL 16
FIGURE 5: RESEARCH ONION (SAUNDERS ET AL., 2008, P108) 28
FIGURE 6: DEDUCTIVE AND INDUCTIVE REASONING (TROCHIM, 2006) 31
FIGURE 7: PIE CHART: YEARS WORKED IN COMPANY 39
FIGURE 8: PIE CHART: YEARS OF EXPERIENCE 39
FIGURE 9: PIE CHART: CULTURAL BACKGROUND 39
FIGURE 10: ORGANIZATIONAL LEARNING IS COMPETITIVE ADVANTAGE 47
FIGURE 11: SUB-QUESTIONS + HYPOTHESES 51

LIST OF TABLES

TABLE 1: DESCRIPTIVE DATA – SPSS OUTPUT 40
TABLE 2: CORRELATION MATRIX 41
TABLE 3: SIMPLE LINEAR REGRESSION COEFFICIENTS 43
TABLE 4: SECOND SIMPLE REGRESSION ANALYSIS COEFFICIENTS TABLE 44
TABLE 5: MULTIPLE REGRESSION ANALYSIS COEFFICIENTS TABLE 45
1. Introduction
The amount of competing companies that start to collaborate has significantly increased in recent years (Holtbrügge, 2004, p. 256). In the high-tech industry there are numerous instances where firms sign cross-licensing deals to increase competitive advantages and create more innovative products and services (Bidault & Cummings, 1994, p. 34). Companies in this and similar industries tend to cooperate and develop new services and products without a definite merger or acquisition (Hagedoorn, 1993, p. 380). In most instances this joint occurrence of cooperation and competition between the same two actors is rooted in joint ventures or strategic alliances (Pastor & Sandonis, 2002, p. 245). These forms of partnerships help companies to share costs, share risks, get market access, obtain resources (Rothaermel & Boeker, 2008; Garcia-Canal et al., 2002), and transfer knowledge. The danger in these partnerships is sharing too much information rendering your company invaluable. Since most of these partners are also competitors there is an interesting and challenging relationship emerging in business. The phenomenon is coined as coopetition, the simultaneous behaviors of competition and cooperation in different activities between two or more parties in the industry (Bengtsson & Johansson, 2012, p. 402). This recurring phenomenon has become a part of today’s business and is therefore of importance to further explore and fully understand its nature and consequences.

In the high-tech industry one of the main coopetitive activity is the simultaneous transfer of knowledge and protection of knowledge. Knowledge is one of the most important factors in this industry because it helps the firm to stand out from the crowd with innovative technology. Now that hardware is easily available across all players in the market, the knowledge and software technology is where companies can really create competitive advantages. To really protect and harness the knowledge many businesses use patents or confidentiality measures. Patents help to create short-term exclusive rights to materialize the concept without any competition whereas confidentiality clauses help to reduce knowledge leaks. When the firm legally owns this knowledge through patents, it is easier to cooperate with partners by sharing that ‘package of acknowledged knowledge’ and thus create partnerships. Additionally, patents function as collateral to secure investments from external sources (Mazzoleni & Nelson, 1998, p. 1035). In recent years, there has been an increase in patent applications (Hall, 2003, p.1), which backs up this statement of an evolving knowledge-based business field. Studies on coopetition also show that coopetition occur more often in the high-tech industry, which will be my business field of research.

1.1 Coopetition – A paradoxical relationship between firms
Similarly to the business world, the academic world has seen an increasing development in coopetition research. Coopetition is a valued topic in the academic world as the numbers of articles on the topic increase. Bengtsson et al. (2013) mentioned an exponential increase in published coopetition articles after Raymond Noorda, CEO of Novell, coined the concept. During this exponential growth the definition of coopetition has been altered in various ways and tweaked to fit a broader perspective.
With these changing and multiple definitions of the coopetition concept numerous fields opened up, which sparked an interest for researchers leading to an expansion of the coopetition scope. However, this vast expansion of the concept blurs the core concept and damages the usefulness of the concept to understand the phenomenon (Bengtsson et al., 2013) (Bengtsson & Kock, 2014, p. 415). I agree with Peng (2004, p. 101) when he states that ‘it is important for a field to reach some consensus on the importance of a big question (e.g. the definition of coopetition). Otherwise, if a field unable or is unwilling to reach such consensus it is likely to experience tremendous or even excessive diversity.’ In order for the field to have more solid ground and traction for future research I will adopt an already existing concept of coopetition rather than developing a new version which would only create more diversity. The field of coopetition needs more contingency instead of an increased diversity because right now there are too many definitions of this phenomenon. Three main streams of thought can be identified in past literature on the paradoxical relationship called coopetition.

For this thesis I will adopt the stream in which the researchers follow a definition of seeing coopetition as the mutual occurrence of competition and cooperation between two or more actors. This definition implies that coopetition is a paradoxical phenomenon, as two contradicting logics are applied in the same relationship between firms. Lewis (2000, 760) said that a paradox materializes when two contradictory yet interrelated dualities, in this case cooperation and competition, are juxtaposed. The two opposing forces of competition and cooperation have such dichotomies within their approach that when both are applied in the same environment, tensions will potentially occur. These tensions make it rather challenging to successfully maintain a balance between cooperation and competition (Bengtsson et al., 2010, p. 204). Though, one should be aware that tension by itself is not negative. Tension can be beneficial and positive if the tension is managed and balanced accordingly. That is why Bengtsson and Koch (2014, p. 183) stress the need to focus on “understanding the coopetition paradox and engendered coopetition tension.” If this paradox or tension would break, the relationship is in danger of breaking with the loss of possible benefits from both cooperation and competition. The need to manage or control the coopetition tension calls for managerial expertise or a specific coopetition capability.

The knowledge about intra-organizational coopetition is scant
In the academic field, coopetition has been studied in different business contexts and on different levels. The main scopes of the phenomena include coopetition on the individual, intra-organizational, inter-organizational, and inter-network level (Bengtsson et al. 2013, p. 183). Combined, research on these different levels has a total number of 100 articles that try to understand and phenomenon of coopetition. Furthermore, most of the research that has been conducted over the last 20 years focused on the external environment, such as the inter-organizational and network coopetition (Bengtsson et al., 2013, p. 11; Luo et al., 2005, p. 76).
**Draw from inter-organizational theories**

As the knowledge and research on the intra-organizational level is scarce, I will draw my theoretical framework on inter-organizational studies mostly and apply it on the intra-organizational level through a quantitative explorative study. In this thesis I will concentrate on the intra-organizational scope of coopetition and argue that internal tension and organizational learning are two important dimensions in relation to internal coopetition. Internal coopetition has a great potential and can unfold many benefits for all kinds of firms and for different departments within each firm. To exemplify, results based on internal coopetition can aid Human Resources, General Administration, Business Development, Strategic, Internal Communications, Internal Branding, and other teams in their decision-making. The following motives and obtained benefits from competition on one hand and coopetition on the other hand drive entities within a firm to involve in coopetition.

**Competition**

On one hand, numerous studies show that departments compete with each other for parent resources to increase their independence (Luo, 2003, p. 299). The reason for obtaining this independency is so that departments more easily can attain their goals and grow their respective returns. Such independency allows these departments to gain market expansion or other company benefits (Hill et al., 1992; Luo, 2005, p. 84; Ghobadi & D’Ambra 2012a, p. 287). This internal competition has benefits and drawbacks for the bigger picture of the organization. The firm will benefit from the employees’ motivations to perform better and become more efficiently within the department. However, the drawback of such competition is the lack of scalability and increased tension. Colleagues will, to a lesser degree, see each other as partners striving for the same mission and view colleagues rather as enemies. This will dilute the focus of the firm and financial performance might suffer from this lack of greater vision to work hand in hand (Rosen, 2009).

Furthermore, departments compete to gain a better position in the company, and such position can vary from a system position, knowledge flow position, value chain position, or influencing power position (Luo, 2005, p. 84; Martinez & Jarillo, 1989, p. 491). Having such an advantageous position in the system gives the department more decision making power and enable it to gain additional knowledge through the positions within the company. The more knowledge a department has accumulated, the more likely it is that the department is of crucial importance to the whole firm and thus knowledge is key resource to protect within the department. Gupta and Govindarajan (2000) concluded that the fear of increased value of the competing entity’s knowledge is apparent and departments want to attract as much of the firm’s scarce resources to work with. In some cases, with Strategic Business Units (SBU’s), like in the case for Unilever or P&G, departments even compete for external market share and thus wish to not share critical information (Tsai 2002, p. 180).
Some departments believe that knowledge is a private good for the functional unit and not a public good for cross-functional units (Wasko & Faraj, 2000, p. 36). By refraining from sharing knowledge they gain a competitive advantage over other departments in the firm (Lorange 1996, p. 583; Van der Bij et al., 2003, p. 164). This internal competition and protection of knowledge can be beneficial for the firm when these departments have their own products to market. Furthermore, internal competition, which fundamentals are based on being better than others, might drive employees to push the boundaries of innovation, process control, or other competitive paradigms.

**Cooperation**

Alternatively, departments need each other to reach their desired goals and thus cooperate. According to different studies, departments cooperate to realize economies of scope (Hill, Hitt & Hoskisson, 1992; Ghoshal & Bartlett, 1988; Zander & Kogut, 1995). Another reason to cooperate is to drive down costs by jointly developing (Govindarajan & Gupta, 2001; Arora & Gambardella, 1990; Cassiman & Veugelers, 2002), and to share systems, or resources (Govindarajan & Gupta, 2001; Kostova, 1999; Kostova & Ruth, 2003; Szulanski, 1996; Luo, 2005). Knowledge sharing is important for intra-organizational coopetition to enforce the cooperative part. This all strengthens the company’s departments, but when a company is able to facilitate intra-organizational communication channels then tacit or explicit knowledge can be capitalized to the fullest extent. The benefits for the company to promote knowledge sharing are, amongst others, increased chances for a new product to succeed (Griffin and Hauser, 1992, p. 361) and the overall organizational learning goes up as more knowledge is available to all employees (Huber 1991, p. 111; Tsai 2002, p. 179; Ruekert & Walker, 1987, p. 3). Plus, all this knowledge will facilitate the organization’s goals as more data is available and more synergies can be found (Ruekert & Walker, 1987; Tsai, 2002). With all this comprehensive data readily available throughout the firm, more suitable decisions can be made aiding firm performance and in creating competitive advantages (Gray and Meister 2004; Maltz and Kohli 1996; Ghoshal & Bartlett, 1988; Zander & Kogut 1995). Though, such cooperation can also have its downsides for the company. When all details are available to all employees, leaks or data theft is more likely to happen. Still internal competition is needed to balance the two forces because competition will help to create efficiencies or to strive for higher goals.

**Internal coopetition results in tensions coopetition**

The paradoxical state of coopetition might result in pressure, which can damage firm performance. Firms are thus urged to create a coopetition environment or to obtain ambidextrous skills to cope with these different demands (Gnyawali & Park, 2011; Raza-Ullah & Bengtsson, 2013). The ambidexterity literature, which argues for the usefulness of managers with a diverse set of skills, is far from perfect. Though, it does conclude that these managers have the unique ability to manage two opposing forces, as we see in coopetition. Yet solid results show that ambidextrous firms, with their capability to understand the two competing logics of interaction (competition and cooperation), developed sustained performance (Das & Teng, 2000; Tushman & O’Reilly, 1996). This shows that tension itself does not have to be problematic or associated with negative outcomes per se. This tension arises as an effect of two naturally contradicting forces.
It might take time to fully understand how to cope with these relatively new tensions but once a firm does it can reap rewards. However, when these tensions become uncontrollable and are high, firms will experience more negative performance outcomes as a result (Raza-Ullah & Bengtsson, 2014; Fernandez et al., 2014, p. 229). It is thus important for companies to take tension and the capability of ambidexterity of the firm seriously. This research is mainly done on an inter-organizational level, but the same knowledge can be applied to the intra-organizational level when talking about coopetition in departments of one firm.

**Coopetition capabilities to balance tensions**

Coopetition capabilities are important to keep the tension balanced and thus extract more benefits for the firm. Previous research suggest that coopetition tension can be moderated or mediated with different mechanics in place, such as managerial ambidexterity, emotional ambidexterity, coopetition experience, mindset of executives, or superior and complementary resources (Bengtsson et al., 2014, p. 2; Raza-Ullah & Bengtsson, 2014, p. 15; Gnyawali & Park, 2011, p. 654). All these findings are based on manager’s capabilities and his/her profile. This young niche field of coopetition has to be researched more in-depth to find greater means to counterbalance internal tensions.

The managerial ambidexterity especially focuses on the decisions made in the coopetition context. When managers are expected to maintain the balance of the coopetition they are expected to use their analytical yet paradoxical thinking to extract the most useful aspects of the tension (Eisenhardt, 2000, p. 703). This does not mean that managers should make a trade off, which will likely result in an either cooperation or competition dominant environment.

As described by (Raza-Ullah & Bengtsson, 2014, p. 4) both cooperation and competition evoke dedicated feelings with any of the actors. They state that positive emotions are present in cooperative elements, which are mostly present because of the job/task/environment at hand. Positive feelings that are derived from cooperating are trust, happiness or other similar feelings. Whereas negative emotions are closely related to competition, these emotions bring feelings of distrust and anger with the people. Automatically, the people that partake in coopetition can be confused about how to feel towards this cooperative yet competitive other department. This is where employees should have ambidexterity, receive appropriate training, or should be managed by a superior who can provide guidance on a deeper level than just business. This manager should have more personal relationships to understand their emotions.

Lastly, I will draw upon the findings of Gnyawali and Park (2011) who found three coopetition capabilities based on a relationship study between Sony and Samsung. The three identified capabilities are coopetition experience, mindset of executives, and superior and complementary resources. Managers should possess or have access to these capabilities to obtain most advantages of the tension created by coopetition.
**Internal coopetition and organizational learning**

In the literature on organizational design, it was long argued that a firm should either maintain a cooperative or competitive internal approach, though I state that the paradoxical phenomenon of coopetition can be beneficial for the firm and the departments involved. The two contradicting forces have distinct but different benefits that simultaneously spur positive outcomes (Zhang et al, 2010). The benefits of each approach should be extracted as much as possible and implemented correctly to increase organizational learning. Especially when looking at Luo (2005), who clarifies that coopetition reinforces the increase of organizational learning. As explained before, organizational learning revolves around knowledge and the sharing thereof. Logically, the infrastructure of knowledge is a crucial aspect of this distribution of knowledge. Luo (2005) argues that MNEs should build proper infrastructure systems to nurture coopetition and he argues for several systems to help with the sharing of knowledge. In short, these systems allow firms to turn new knowledge into productive results or useful datasets for enhanced decision-making, foster a learning environment, streamline certain processes, and become more efficient in communicating with subsidiaries. This shows how dedicated (communication) platforms can improve organizational learning through coopetition. Luo (2005)’s identified systems help departments to share knowledge, which is the cooperative part of coopetition. However, systems can also be used to increase competition. Numerous sales platforms have incremental incentives to boost performance individually and boost employees to seek and generate knowledge for their (own) benefit. Therefore, it is interesting to have the following question for the master thesis:  

*Can internal coopetition enhance organizational learning, if so, how?*

But to answer this question further exploration of the paradoxical nature of coopetition and the tension engendered as a result affecting organizational learning is necessary. Coopetition can create tension that might hinder learning and hence needs to be managed accordingly.

### 1.2 Purpose

As Luo et al. (2006) point out in their research gap it has not yet been proven if cross-functional learning by departments, thus the extraction of knowledge or gaining experience through interacting departments, mediates in the intensity or capability of coopetition in a firm. Though, I want to turn their gap around by testing if organizational learning is affected by internal coopetition instead of studying if internal coopetition is affected by internal organizational learning.

Part of the reason why I wish to answer this gap is because the literature on intra-organizational coopetition is rather undiscovered. Especially the management of arising tensions in the intra-organizational level in relationship with positive learning outcomes has not been studied. In general the literature on intra-organizational coopetition has to be expanded in order to fully understand the coopetition paradox. To be able to do so and to cover the gap, I will conduct this empirically explorative study.
The results will add to the field of coopetition and organizational learning. Organizational learning is of crucial importance in this day and age because knowledge and information helps companies get ahead or maintain market leadership. This can only be achieved if all capabilities are utilized.

**Fulfilling the purpose**

As intra-organizational literature has not been studied to a great extend thus far, the knowledge I can build upon is limited. To cover for the lack of intra-organizational theories I will use proven insights of the inter-organizational level to explore intra-organizational coopetition and its consequences for organizational learning.

Following and answering the following question will fulfill the purpose and the overarching research question.

(1) How does internal coopetition intensity and resulting internal coopetition tension (2) affect organizational learning and (3) does internal coopetition capability mediates the internal tension affecting organizational learning within a firm in relation to coopetition intensity?

I will use a mediator in the research because I argue that internal tensions decrease the power of the coopetition intensity in relationship to organizational learning. This mediator role is the coopetition capabilities, which are capabilities that enable companies to use coopetition to its fullest extent. These mediators should lower the effect of internal tensions on the coopetition intensity.

**1.3 Disposition of the thesis**

This disposition of the thesis gives a clear overview of what the reader can expect in each part of the thesis and how this adds to the overall value of the research.

**Introduction**

In the introduction, the reader will find a basic description of past literature and the motivation behind this research. The research question and the purpose of the thesis are clearly stated, too.

**Theoretical Framework**

In the theoretical framework an extensive overview of previous literature their respective findings are presented. Previous results support the building of a research model after which each variable is argued. The relationships between the (in)dependent variables are written in hypotheses.

**Methodology**

The methodology chapter helps the reader to understand what methods and analyses have been used in obtaining the results. The sample size and philosophical background on ontology and epistemology are also given.
Results
The results are given in various formats including tables, graphs, and written text. This chapter gives the reader an idea of what the outcomes are from the data collection without attaching any conclusions or discussion onto them.

Discussion
Discussion is of crucial importance in one’s thesis as this will add to the understanding of the topic for both the researcher and the reader. The results are discussed and finalized upon.

Conclusion
Here the final statements and reiteration of the research question is done. The purpose and the hypotheses are also concluded upon and managerial advice, limitations and theoretical implications are included.
2. Theoretical Framework

Coopetition as a concept has not always been labeled as successful for businesses. Instead, business collaboration was argued to be a second-best option (Beamish, 1988; Franko, 1971; Harrigan, 1986). Porter (1990, p. 67) even mentioned that only second-tier companies used alliances to catch up with the market leaders. A paradigm shift changed the way people viewed doing business and collaborations were forged with more confidence. Part of this shift has to do with researchers identifying more advantages towards working with other firms in a mainly international aspect. Holtbrugge (2004, p. 256) identified three main drivers of collaboration amongst firms, which are scale advantages (Dussauge et al., 2000; Park & Russo, 1996; Porter & Fuller, 1986), resources advantages (Beamish & Killing, 1997; Holtbrügge, 1995; Sim & Ali, 1998), and learning advantages (Kale et al., 2000; Simonin, 1999; Stuart, 2000). Cooperation amongst firms opened up as a new way to get a hold of the advantages available by harvesting new knowledge and reduce costs. Yet, companies still competed with each other, which is the very nature of doing business. This paradox, cooperating while competing, brought along coopetition. To narrow down the research, I have decided to focus solely on the high-tech industry for the reason that coopetition is very common in this industry. Partnerships are crucial to survive and prosper in the high-tech industry, because departments and companies rely upon knowledge and the sharing or protecting of this commodity.

2.1 Definition of coopetition

Coopetition, the phenomenon of the joint occurrence of competition and cooperation, is present at different business levels. The different business levels, as researched by (Bengtsson et al., 2013, p. 183) are individual, intra-organizational, inter-organizational, network, and internetwork. All these levels have different research streams with coopetition as a key principle. The first group focuses on coopetition with a game theory lens with researchers such as (Brandenburger & Nalebuff, 1996; Cairo, 2006; Clarke-Hill, Li, & Davies, 2003; Gnyawali, He, & Madhavan, 2008). They split up coopetition into competition and cooperation with different actors. As game theory suggests, a trade-off has to be made to either compete or collaborate to gain the highest means. For example, one actor cooperates with a second actor to appropriate value to increase competition with a third actor. This is, but not limited to, the coopetition of more than two actors on more than one activity.

The second group of researchers sees coopetition as the mutual occurrence of competition and cooperation between the same actors but on different activities. This means that one actor cooperates with a second actor in one activity and competes with that same actor on other activities in the same time frame (Bentsson & Koch, 2000, p. 415).

The third and last group of researchers (Powell, Koput, & Smith-Doerr, 1996 and Gnyawali & Madhavan, 2001) is more concentrated on network activities between coopeting firms in order to share knowledge and develop competitive advantages through networks.
Coopetition is defined differently in past literature. To delve into the definition of this phenomenon, a distinction has to be made between coopetition on one or two continua. The idea of coopetition on one continuum follows a theory where the rate of cooperation is affected by the rate of competition and vice versa, illustrated in Figure 1. Tjosvold & Wong (1994) and Tjosvold (1997) follow this idea and describe coopetition to be a correlated trade-off effect between competition and collaboration. Therefore, it has been said that when competition is dominant, the department will keep knowledge to itself and through that trying to obtain department specific gains (Levitt, 1969). On the other hand, when collaboration is dominant, knowledge flows more freely and company information is available for different departments (Gramaveter, 1985; Kogut and Zander, 1996). Possible advantages are to be obtained in cooperation dominated activity and a competition-dominated activity is also exemplified in the Figure 1.

![Coopetition Slider](image)

Figure 1: Coopetition Slider. Slider can only move over its x-axis.

The drawback of the model depicted in Figure 1 is that it is limited to only show one activity in the same timeframe. The activity is described as either dominated by cooperation or competition and cannot be truly coopetitive, as a both/and perspective is not applied. A both/and perspective is needed to capture the dynamics that support departments which are involved in extremely competitive activities and in extremely cooperative activities at the same time. Coopetition need to be seen as two continua with one for the cooperation part of the relationship and the other for the competition part of the relationship, and be defined as cooperating in one activity and competing in another. Defining coopetition on two continua enables us to acknowledge that the rate of competition can be high or low as well as the rate of cooperation can be either high or low independently from each other (Lado et al. 1997; Luo, 2005). Luo, (2005, p. 81) presented his version of the two continua model, which I build upon. I believe adding a ‘balanced’ section strengthens the model. Luo did not argue for balanced coopetition or unbalanced coopetition. Similarly, he does not mention tensions as a result of coopetition. The (un)balanced coopetition can only be discussed when talking about tensions rising from such coopetition.
Figure 2 depict the coopetition reality to a greater extent than figure 1 does. Therefore, in this thesis I will follow the two continua coopetition definition, as illustrated in figure 2. The rates of cooperation and competition depend on the actors’ involvement in the two different interactions that build up the relationship. The matrix shown in Figure 2 illustrates the different coopetition states that can develop depending on the intensity of cooperation and competition.

Figure 2: Adapted coopetition matrix (Raza-Ulla et al., 2014)

As suggested in figure 2, a combination of high or low involvement is possible resulting in a total of five different scenarios, namely Weak cooperation, Competition dominant, Cooperation dominant, Strong Coopetition, and Balanced coopetition where both interactions are equally strong but on a moderate level, neither too high nor too low. The coopetition paradox, as argued for before, can be balanced or unbalanced. When such relationship is unbalanced, it has a dominating competition or cooperation. Though, the paradox can present itself in a balanced, yet strong form. This strong paradox is prone to evoke strong tension with a high ability and intensity of competition. Alternatively, the paradox can be balanced without having strong tensions (Das & Teng, 1999).

**Review of previous research on intra-organizational coopetition**

As stated in the introduction of this thesis I will focus my attention on the intra-organizational coopetition in which very little research has been done (Rindfleisch & Moorman 2003; Zeng & Chen 2003). A total of 82 percent of all coopetition research is externally based, meaning focusing on inter-organizational or inter-network relationships. Figure 3, the Coopetition Article Distribution, expresses the distribution in a pie chart.
It is claimed that, after identifying coopetition being present in 70 different business journals (Bengtsson et al., 2013, p. 9), 43 percent of all coopetition related research focuses on inter-network coopetition (Bengtsson et al. 2013, p. 11). Additionally, a total of 39 percent of all the coopetition research has been done to understand inter-organizational coopetition. The individual level accounts for 12 articles and thus has 12 percent of all coopetition research. In contrast, Intra-organizational level literature, which is defined as ‘coopetition between teams, groups, units, projects etc. within an organization’ (Bengtsson et al., 2013, p. 7), lacks extensive research, as only 5 percent of the research is on this level. According to Luo (2005, p. 72), strategic business units and their strategic links to each other has not been explored fully yet.

A mere five articles have been published on the effects of intra-organizational (Bengtsson & Koch, 2014 p. 183). These articles and their respective results are discussed below. Tsai (2002, p. 182) aimed his empirical research at a large multi-unit company and sent out questionnaire to selected employees. His research at the multi-unit firm investigates how knowledge sharing within this organization is coordinated and looked at what role competition plays within the firm. He showed that “an organization's ability to transfer internal knowledge is influenced by both formal hierarchical structure and informal lateral relations.” In short, Tsai provided significant evidence to state that social interaction is key for intra-organizational knowledge sharing whereas centralization of the firm’s hierarchical structure is destructive for knowledge sharing within the firm because of headquarters’ tendency to intervene, poor decision-making, and others (Tsai, 2002, p. 187).

![Coopetition Article Distribution](image)
During 2012, Ghabadi and D’Ambra (2012a, b) published two papers on the movements towards coopetition in intra-organizational software development teams and how this is important for the success of the software development process. They empirically conceptualize and operationalize the multi-dimensional construct of cross-functional coopetition by drawing information from 115 project managers linked to the five major IT associations in Australia. It was found that cooperative task orientation, cooperative communication, and cooperative interpersonal relationships are key to drive knowledge sharing behaviors in software development teams. In terms of competition, when competing for tangible resources a positive effect was found on communications. Though, when competing for intangible resources there were negative results on communications. This model helps to explain and manage knowledge sharing within an organization while taking competition into account. The limitation to this model is that it has only been tested in Australia and thus the generalizability seems non-sufficient.

Luo (2005) is the fourth article to focus on intra-organizational coopetition. Luo presents a model to more easily classify the intensity of cooperation and competition of subunits in the firm. To clarify, he suggested the following terms: Aggressive Demander – high competition, low cooperation; Network Captain – high competition, high cooperation; Ardent Contributor – low competition, high cooperation; and Silent Implementer – low competition, low cooperation. The Aggressive Demander is a department with high demands for parent resources, thereby limited other departments’ resources. The Network Captain is a subsidiary, which has many shared competencies within the company and ranks high in the company’s systems. The Ardent Contributor is a department that has or creates many resources and shares that with other departments within the firm. Lastly, the Silent Contributor is a rather independent department that acts independently and reactively merely to extend the firm’s reach. Luo’s initial model and work on intra-departmental coopetition is of much value and I will build upon this model in my research.

Though, there is a limitation to Luo’s work, namely the lack of classifying subunits. In my thesis I will not focus on comparing differently structured subunits, though, future research should take this into account to better understand intra-organizational coopetition. Companies are completely different and so are the powers of different subunits. Some firms have more independent units with dedicated products whereas other firms have more intertwined departments who share dedicated products. For example, Unilever has many different SBU’s with dedicated teams for peanut butter, soft drinks, and many more. These teams also compete on the external market, which is an extra dimension to take into account. This coopetition dynamic moves within and beyond the boundaries of the firm, which is a completely different scenario for Apple. Apple has multiple departments working on one external product. These departments coopete internally, but not externally. This major difference between firms, the so-called multunit companies and regular companies, is what should be researched profoundly to have a broader understanding of coopetition within any firm.
Luo et al. (2006) did an empirical study in China to find in-depth information about the effect of cross-functional coopetition on performance. With a large sample group, consisting of over 320 respondents in 163 firms, it was concluded, “cross-functional coopetition enhances a firm's customer and financial performance.” This has the managerial implication that competition amongst departments is not always harmful and that, when promoting coopetition the market learning, customer performance, and financial performance benefits significantly.

Interestingly, even though most articles talk about knowledge sharing and similar behavior being part of coopetition, none of the articles talk about organizational learning. Granted, Luo et al (2006) do talk about market learning, though, merely in a mediating role of a bigger model. By adding the variable (organizational) learning the readers can more easily identify the added benefits of adopting the models or apply the new rules to their own businesses. All five articles fail to mention tensions or how to manage these tensions as a result of coopetition. By including these variables the models in each respective article would increase in strength and predictability. Conversely, the articles have useful information that future researchers and I can build upon. Amongst others, the three biggest findings are the classification system for departments (Luo, 2005), the increased performance of customer service and financials by coopetition (Luo et al., 2006), and the affect hierarchal structures have on coopetition and firm performance (Tsai, 2002).

The intra-organizational coopetition literature has not touched much upon the tension created by coopetition whereas external tension on the inter-organizational level of coopetition is studied more thoroughly (Bengtsson et al., 2014; Näsholm & Bengtsson, 2014). This tension itself can both be negative and hinder learning, but it could also have positive traces, such as to learn more creative problem solving techniques or weed out the less capable managers in the firm. Though, the literature does not talk about how coopetition, especially internal coopetition, affects organizational learning while taking tensions into account. Furthermore, knowledge is one of the main assets to be shared or protected, as evidence in previous literature suggests. Thus, I wish to find out how internal tension affects the organizational learning within the firm.

### 2.2 Model Building

Based on the review of intra-organizational coopetition complemented by insights from previous research on inter-organizational coopetition, I will develop a theoretical model to address some of the issues that yet have not been explored in intra-organizational research on coopetition. I will draw many of the arguments from the research on the inter-organizational level adjusted to internal coopetition. Therefor it can be argued that this study is an explorative study in which I try to use inter-organizational models and arguments and apply them to the intra-organizational level. The focus is on organizational learning and how coopetition intensity and internal competitive tension might affect organizational learning, as well as how coopetition capability might affect the tension and the outcome. The theoretical model is illustrated in figure 4.
Coopetition Intensity
A big part of this research revolves around the effects of cooperation and competition within a firm. I will first go through what the literature has previously discussed. I found there are some reoccurring themes such as social, strategic, and advantages of cooperation and learning within a firm. After that I will continue the discussion for competition in the themes of social, strategic and advantages. The arguments mainly draw upon the actions and interaction between departments in one firm rather than cooperation or competition between firms.

Cooperation
Companies consist of different departments each having different functions and processes. All departments may also be different in the way they create and appropriate value for its members. Without a well-structured internal communications system in place departments can do overlapping tasks, researches, or purchases that are unnecessary.

Advantages
Naturally, being well informed of what other departments are doing can help create synergies, share costs on research projects or major investments (Bartlett & Ghoshal 1993, p. 34; Govindarajan & Gupta, 2001). One of the department’s aspects is accruing knowledge through internal and external sources. Departments need internal knowledge to see how the respective department fits into the knowledge flow and to identify its parameters to where it should add value. Through internal cooperation the knowledge flows through the firm and thus the organizational learning increases. The department should also extract knowledge externally to have more meaningful added value to the overall product and to understand the market better. This knowledge can be purchased, self-researched, or obtained through experience or other legal means (March, 1991).
When one department in a company has certain knowledge, other departments can benefit from this knowledge spillover, which ideally leads to more advantages from one source of knowledge. The ability and willingness to share knowledge reduces the siloed and disconnected knowledge systems, duplicated features, but also increases the functionality and efforts of all departments as they can focus more on their core tasks (HP, 2013).

**Socially**

On a social dimension, intra-organizational knowledge sharing, and thus cooperation, is enhanced by the level of social interaction between units (Sharratt & Usoro, 2003 p. 189). This level of social interaction is partially influenced by the organizational structure of the firm. Initially, previously it was believed that centralization increases the intra-organizational knowledge sharing because centralization provides coordination and integration across the interdependency (Egelhoff, 1988, p. 568). However, when the organizational structure of the firm is more tightly controlled and centralized, meaning that the headquarters make most decisions, the departments are less willing to share knowledge with other colleagues (Tsai, 2002, p. 186).

Tsai (2002, p. 187) tries to explain why this centralization of the firm hinders knowledge sharing by saying that headquarters intervene excessively and poor decision making of the headquarters by not having all the (local) knowledge at hand. Thus to be successful in transferring knowledge across the firm, firms must be highly flexible and responsive (Chung, 2001, p2). Additionally, companies may want to think about their flatness of the hierarchy if they want to increase knowledge transfers. According to Hall (2001b), people with a similar status in the firm are more likely share knowledge amongst each other. Thus, a flatter hierarchy may prove to be beneficial for knowledge sharing.

**Strategic**

According to Tsai (2002), intra-organizational knowledge sharing contributes to recent developments in strategy that conceptualize the firm as a bundle of resources and knowledge linked together through firm-specific routines that are the source of competitive advantage (Barney, 1991) (Madhok, 1992). However, it can also be argued that increased knowledge sharing can increase the risk of information leaks due to more exposure. Yet intra-organizational sharing can be done properly in secure databases with the right clearance levels to avoid such risks.

The different dimensions of cooperation I described above are all arguments why departments should aim to cooperate together and ideally distribute knowledge. When departments are able to achieve joint development, identify duplicate costs, share risks, or share knowledge then the tension amongst these departments will decrease. The moment all employees have one common goal, as set and communicated by higher management, there will be less friction as employees are focused and the social interaction increases. Employees will be more aware of each other’s responsibilities and purpose, thus each person knows where to go for help or additional information to reach his target.
Competition
Companies can also promote competition between departments to increase productivity and boost the amount of knowledge developed by employees. A supporting example was found in Royal Dutch Shell, ‘Shell had two functions that were focused on bettering their own individual departments and competing for business within the organization. When these competing functions come together to share knowledge, the organization reaped higher performances’ (Burress & Wallace, 2003). This example shows two processes, namely two departments who compete can obtain their own knowledge, yet, only when sharing this knowledge true potential of the knowledge is materialized. As discussed by Luo (2005, p. 75-76) departments compete for parent resources and support (Luo, 2003), different system positions (Martinez & Jarillo, 1989, p. 491), and market expansion. The latter motivation, market expansion, is dependent on the structure of the company and the number of outwards facing departments. For example, Unilever has many outwards facing departments (e.g. sub brands). The reason for this competition is to obtain an amount of independency to more easily attain their respective goals and to grow their respective returns (Hill et al., 1992; Luo, 2005; Ghobadi & D’ambra, 2011).

Advantages and Disadvantages
The willingness to become more independent from the parent firm brings some advantages and disadvantages to light. The advantage of becoming less dependent is the increased freedom to decide its operational path and how to do so. There is less excessive interference from headquarters and the department can transform as it sees fit. Yet, the move to become independent also has drawbacks. The independent department can rely less on the parent resources and support. Additionally, the headquarters faces disadvantages too as the competition on the market increases and the other departments may be hindered (Luo, 2005, p. 76). Some tasks or goals can only be achieved when departments work together because of their complexity, and that is when internal competition is especially destructive (Pfeffer & Sutton, 1999). As Rosen (2009) said, when a mistake has been made in an internal competition dominant environment people are quick to point at another department. In general, with internal competition in place, people tend to see their colleagues as enemies rather than collaborators. The so-called ‘rank and yank’ system, where bottom-performing 5% of the workforce is eliminated every period, has the effect that employees waste their time to compete against each other instead of focusing at the business at hand (Rosen, 2009).

Socially
Socially, the employees will become more siloed and only work for and in their department and are likely to miss the bigger picture of the company. Numerous studies have shown that interdepartmental social interaction is key to drive innovation. When employees are only ‘department minded’ the innovation cycle will diminish (Tsai & Ghoshal, 1998; Ghoshal et al., 1993; Ibarra, 1993; Leonard-Barton & Sinha, 1992; Powell et al., 1996).
Strategically
This independency hinders the knowledge sharing ability though it supports in striving for competitive advantage internally (Lorange, 1996; Van der Bij et al., 2003). Each department has the characteristics of a competitor and its main concern is to grow and achieve results rather than collectively, with all departments, achieving goals.

Thus, when all departments or functional teams become siloed, employees see each other as competitors rather as colleagues who work together on one mission, and only having their department goals in their sights there is a lack of integrated business and relationships in the company. The departments are not in sync and there is no harmony within the firm to work on a project or produce industry wide competitive advantages. When all these competitive drawbacks as described are present in the firm, tension is likely to rise within the firm.

H1: Internal Coopetition Intensity increases the Organizational Learning.

What Is Tension?
Tension creation is a crucial aspect of coopetition. When combining the cooperative and the competitive natures of people discussed in the parts above, we derive at the coopetition. There are always two opposing forces present in coopetition, and thus tension is very likely to occur. When the coopetition intensity is high I argue that this will cause internal tensions to rise. The paradox that arises from these two extremes, the competition and cooperation within the firm, is hypothesized as confusion and tension increasing. In addition, both of these extremes have features that increase the organizational learning. Coopetition enables knowledge sharing throughout the firm whereas competition enables the employees to obtain as much knowledge as possible.

For that reason I will explain what tension means and why it is vital to take this variable into consideration when talking about intra-organizational coopetition. In this case specifically, tension is the simultaneous pressure of competition and cooperation to hinder or support organizational learning.

As stated previously, tension can take place due to the joint occurrence of competition and cooperation within the company. This tension we talk about refers to the “two co-existing contradictory forces with conflicting goals.” (Fang et al., 2011, p. 774), the internal tensions must not be neglected given that it demands more time and effort of top management dealing with it (Raza-Ullah & Bengtsson, 2014, p5). Additionally, Tidström (2014) made clear distinctions between tensions in which Role and Knowledge tensions demonstrate tensions within the company. The inter-organizational theories that I have mostly discussed in this section will be leveraged and transformed to fit intra-organizational models. This will then allow me to argue that internal (intra-organizational) tensions work similarly to external (inter-organizational) tensions. These tensions can become unbalanced when not managed properly. Alternatively, these tensions can be strong and balanced from which all the benefits can be reaped.
The understanding of tensions is of importance as each department or company aims to control such tensions to benefit from both powers at the end of each spectrum, cooperation and competition.

Tensions are part of the paradox and if these tensions are not managed or coordinated appropriately it may worsen or terminate the relationship between the two parties (Das & Teng, 2000, p. 84; Fang et al., 2011, p. 782). However, tensions are not a negative influence by definition. It has to be managed with the right capabilities to make coopetition work in the internal environment (Raza-Ullah et al., 2014, p. 17; Fernandez et al., 2014, p. 232). Coopetition tension invokes both negative and positive feelings at the same time, such as trusting and distrusting the coopetition partner (Lewicki et al., 1998; Raza-Ullah et. al. 2014). For instance, General Electric urged multiple R&D centers to share knowledge but they also had to compete for parent resources. According to Luo (2005, P. 72) this is just one of the many examples that illustrate the challenge MNEs have to manage in intra-organizational structures and its strategy (Govindarajan & Gupta, 2001; Kogut & Zander, 1996; Tsai, 2002). In this example, GE had to manage internal tension because of the difference in competition and cooperation by nature. To give a few examples on how these two interactions differ, competition is about value appropriation and cooperation is about value creation (Brandenburger & Nalebuff, 1996) or knowledge sharing versus knowledge controlling (Li et al., 2012). These examples clearly show how tensions within a firm can arise. For that reason, I believe that tension plays a major role in the intra-organizational coopetition research field.

To discuss tensions more deeply, I want to discuss Tidström (2014, p. 262) and his distinction between different tensions. He talks about tensions being Roles, Knowledge, Power & Dependence, and Opportunism. To start with Role tensions, these tensions occur within the business or on individual level. Secondly, Tidstrom talks about Knowledge tension, these tensions are created because of the position or demand of knowledge. Knowledge is the catalyst for tensions here, as is also discussed in Tsai (2002). Roles and Knowledge tensions can occur on a company or departmental level and are what I will focus on mostly in my research. Thirdly, Power & Dependence is a source of tensions where “one party may exploit its power to force another party to act in a way that is not in the latter’s best interest” (Tidström, 2014 p. 263). Lastly, there are Opportunism tensions in which one party takes the benefit of the weakness of another party. The former party will seize the opportunity to. Tidström’s work is a significant step in understanding coopetition and the clear differences between tensions make the understanding of this concept easier.

Yet, because the tension arises from the paradox both negative and positive feelings are attached to coopetition tension. A recent approach by Bengtsson and Raza (2014) shows emotions can also play a determinant role in the coopetitive tension. Cooperative activities will gain feelings of confidence, happiness, and trust. Alternatively, competitive activities will evoke feelings of distrust, fear, and greed (Raza Ullah & Bengtsson, 2014, p. 5). This so-called emotional ambivalence is highly disregarded in past research and that this can be crucial in intra-organizational coopetition.
Emotional ambivalence is what is colloquially known as ‘having a double feeling,’ meaning that managers or other personnel involved in coopetitive activities might feel excitement and happiness whilst also experiencing frustration and sadness about this phenomenon (Fong, 2006; Kaplan, 1972; Pratt & Doucet, 2000).

The concept that tension and emotional ambivalence are intertwined is rather innovative and young, and therefore it lacks the knowledge on what emotional ambivalence does on firm performance. However, we do know what tension can do to firm performance as discussed before. Therefore,

\[ H2: \text{Internal Coopetition Intensity causes Internal Tensions to increase.} \]

Organizational learning
I identified a gap in the previous literature in a way that organizational learning has not been included in either of the inter-departmental studies before. Though, organizational learning has been discussed on the inter-firm level. For that reason, I wish to address this gap with this research. As shown, this research tests different variables and their effect on the degree of the performance outcome. The performance outcome in this research is defined as organizational learning.

Departments or any other kind of group within a firm is prone to competing and cooperating with each other -especially with knowledge as a key aspect- and the organizational learning performance or the competitive advantage in high-tech firms can be affected (Luo et al, 2006). Organizational learning is important to the firm because this learning can sustain the competitive advantage of the firm and increase intangible assets such as knowledge and patents, but also form synergies or cost savings (Pucik, 1988, p. 81). However, it should be noted that an increase of organizational learning does not by definition guarantee or create competitive advantages. March (1991, p. 83-84) concluded that often times the learning processes will reduce the variability of performance and thus make the performance more reliable. Therefore, organizational learning remains important in every business activity but it is not a sole guarantor for success or becoming the market leader. Hence, I will discuss organizational learning and its assets. I will first discuss the definition of organizational learning after which I will deepen the discussion in the two main paths of organizational learning.

Organizational learning takes place by sharing insights and knowledge, but also by building on past knowledge and experience. Building on past knowledge can only occur by having access to memory, the place where this existing knowledge is retained. Organizational memory can be divided into routine based conceptions, knowledge existing within routines despite the turnover of personnel, such as rules, technologies, policies, cultures, databases, or other models, (Stata, 1994, p. 32; Levitt & March, 1988, p. 327) and human knowledge where knowledge remains in the minds of the employees. As identified, knowledge exists within routines, hence when more routines or routes are created within the firm through collaboration more knowledge will flow through the company.
Simultaneously, there is tacit knowledge that is difficult to pin down on paper or in databases, this knowledge as mentioned by Levitt and March (1988) sits in the employee’s mind. This knowledge will come out fully when these employees are engaged.

There is more to the definition of organizational learning and knowledge, March (1991, p. 72) made a clear distinction between retained knowledge and new knowledge by describing two different paths of organizational learning. The organizational learning curve can sustain the competitive advantage in two ways, the path of exploration and exploitation. The exploration field is concerned with innovation, new ideas, and experimentation whereas exploitation deals with refining existing knowledge, and selecting the appropriate value and linking them together. In this research, I will not classify the organizational knowledge with this model. Though, for the wholesome of the research it is a definite necessity to mention.

Firms cannot solely rely on either of the two paths of organizational learning and thus a balance between exploration and exploitation has to be struck to increase organizational learning (March, 1991, p. 71-72; Winter 1971; Levinthal & March 1981). Cyert and March (1963) discuss how the balance does not have to be a 50-50 trade-off but instead, a company should always look at its aspiration levels before allocating budget or other investments to favor either exploration or exploitation. Additionally, both paths of organizational learning have advantages and disadvantages. When the focus tilts towards exploration it reduces the speed of improvement of already existing knowledge or skills (e.g. exploitation). A similar reasoning can be found for exploitation, the more a firm concentrates on exploitation and refining existing technology or knowledge, the less attractive experimentation and thus exploration becomes (Levitt & March, 1988). Ideally, the firm finds his equilibrium between exploitation and exploration.

The firm should define the balance between these two learning paths, including low-level employees and high-level managers. It shouldn’t be a mere command by senior executives on which of the two paths (or the balance thereof) the company will focus, because the actual employees need to be naturally able to fluently with the balance (March, 1991, p. 72).

Luo et al. (2006) argued inter-organizational coopetition realizes performance advantages through market learning. Moreover, a firm’s market learning is influenced by the joint occurrence of its inter-organizational cooperative and competitive ability and intensity. These theories can be translated into the intra-organizational dimension where market learning becomes organizational learning and inter-organization becomes inter-departmental. In this way it can be said that, intra-organizational coopetition realizes advantages for organizational learning and additionally this organizational learning is influenced by the ability and intensity of the coopetition among the departments. The intra-organizational coopetition is thus a potential key influencer on the level of organizational learning. As I argued before, traditionally, firms can only work with exploration or exploitation of knowledge. Through either of these two paths the firm can extend its organizational knowledge. Though, I believe that intra-organizational coopetition allows for both paths of learning to be optimized simultaneously.
Exploration deals with finding new knowledge while exploitation works with improving existing knowledge. When departments compete, they are likely to keep knowledge to themselves or even find (new) knowledge by themselves. When departments cooperate, they are likely to share existing knowledge or find (new) knowledge together. Through coopetition, where competition and cooperation happen instantaneously, departments can find new knowledge whilst also linking existing departmental knowledge. Therefore, I believe that coopetition can greatly enhance organizational learning and that is why I added this performance indicator in my model.

**Tension and Organizational Learning**

The performance outcome in this research regards organizational learning and knowledge harvesting while looking at the independent variables of internal coopetition and dependent variable internal tension. Past coopetition research shows that when a balance between cooperation and competition is struck, the company involved will achieve better performance and more successful long-term partnerships (Lado et al., 1997; Das & Teng, 2000; Park & Gnyawali, 2014; Wu, 2014). It has to be mentioned that performance in the sense of that specific research does not share my definition of performance and thus the results has to be used carefully. What we can draw from that conclusion is the fact that internal tension needs to be in balance and under control by the measures such as a manager’s ambidexterity.

In the parameters of this research, organizational learning is at the epicenter. This learning process increases due to knowledge sharing – the cooperative way. On the other hand, organizational learning increases by aiming for more efficiency and a leaner firm – the competitive way. When these opposing forces have to be dealt with simultaneously, tension arises. This rise calls for the mediation or moderation of coopetition capabilities on the tension so it doesn’t spin out of control. When this tension, however, does become uncontrollable, the company will lose sight of its direction or the financial or customer performance may suffer (Luo et al., 2006, p. 68). The more tension any activity has, the less smooth the activity runs, and this will ultimately hurt the outcome of that specific activity. Similarly can be argued for organizational learning, when there is competition and cooperation at the same time, without any coopetitive capabilities, the performance outcome (e.g. organizational learning) will take a hit.

We can hypothesize the following:

**H3:** Internal Tensions has a negative effect on the relationship between Coopetition Intensity and Organizational Learning.

**Coopetition Capabilities**

An unbalanced coopetition relationship means that the relationship is likely to break and none of the parties will benefit from the potential riches of the relationship. Alternatively, a balanced form of coopetition paradox elicits moderate level of tension that acts as a necessary as well as a sufficient condition for firm performance and long-term partnership (Raza-Ullah & Bengtsson, 2014; Lado et. al., 1997; Das & Teng, 2000; Park & Gnyawali, 2014; Wu, 2014).
Businesses are more likely to promote strong and balanced coopetition relationships. These strong and balanced relationships can be realized through so-called coopetition capabilities. With the support of the controlling mediators firms can have a grip on the relationship and reap its benefits.

**Coopetition Capabilities and Tension and Organizational Learning**

Tensions can be strong or weak (Bengtsson et al. (2014, p. 2) states that a paradox (i.e. tension) is weak when it is either cooperation-dominant or competition-dominant. It is likely that the coopetition relationship paradox is broken and as a result tilts too far to cooperation or competition. These weak tensions, cooperation-dominant or competition-dominant, are easy to manage, as businesses have done so since the beginning of time as past literature suggests. The coopetition relationship paradox becomes interesting when the tensions are strong. The potential ability to extract the benefits from such tensions is higher when mediated correctly (Bengtsson et al., 2014). It can be said that a tension can be strong balanced or strong unbalanced (Raza-Ullah & Bengtsson, 2014).

One of these controlling mediators is the ambidextrous manager. Research on ambidexterity provides evidence that organizations embrace ambidexterity to balance the competing demands, which positively associate with organizational performance (Lubatkin et al., 2006, p. 666). Such as, He & Wong (2004, p. 492) who found that organizations need senior managers to simultaneously manage the tension caused by explorative and exploitative strategies to achieve better. This empirical finding supports the cooperative theory of balancing two opposing and tension creating forces for the evolvement of the firm. Gibson & Birkinshaw (2004, p. 221) concluded that, in terms of ambidexterity, “there does not seem to be a trade-off (…) whereby one is sacrificed for the other.” Therefore, a company or department does not have to fully abandon either force (e.g. competition or cooperation) before becoming successful. On top of that, Gibson & Birkinshaw (2004, p. 222) found that senior executives were crucial in integrated both forces in the operations of the sample firms.

Bengtsson et al. (2014) argue ambidexterity to be a coopetition capability to manage tension within the firm. Ambidexterity is a skill managers can develop to cope with all effects of competition and cooperation. In its most natural sense, ambidexterity means to be equally expert with both hands (Free Dictionary, 2014). If the tension, due to coopetition, is unbalanced, the firm’s performance may suffer (Luo et al., 2006) or the firm lacks a clear direction, which confuses employees and steers them wrong (Bengtsson et al., 2014). Logically, no firm wants these negative effects on their returns or their employees, and thus a long-term solution should be found. One of the ways to avoid negative effects and establish long-term solutions is to identify and build upon coopetition capabilities. Bengtsson et al. (2014, p. 3) define coopetition capability as a way to balance the coopetition relationship by understanding the paradox fully. It has been argued that ambidextrous managers play a crucial role in achieving a balance between two opposing forces (Duncan, 1976; Mom et al., 2009; Gibson & Birkinshaw, 2004; Bengtsson et al., 2014), in this case cooperation and competition within the firm. Ambidextrous managers can support employees understand situations or guide their emotions towards certain decisions.
Simultaneously, ambidextrous managers tend to think in more creative and innovative ways to gain all core capabilities as discussed in the cooperation literature and competition literature without making any trade-offs or otherwise settling for less (Eisenhardt, 2000, p. 703). This coopetition capability is one of the ways companies can reduce their internally unbalanced tensions or grow stronger tensions. When these stronger tensions are mediated appropriately, there are more benefits to be extracted, which will translate into greater performance outcomes. From this information we can hypothesize that:

**H4**: Coopetition capability reduces (unbalanced) tension within a firm.

**H5**: Coopetition capability has a positive effect on Organizational Learning.
3. Methodology
In this section the choice of methodology is discussed and argued for. The methodology is divided into several parts to increase the understanding of the research. This chapter will follow the funnel approach in which I first will discuss the ontological and epistemological relevant to my study. The chapter continues by arguing for the scientific approach, the research design, and the data collection and analysis methods.

3.1 Research Paradigm
To understand why and how I have approached the research questions to fulfill the purpose with this thesis I will discuss the philosophical concepts of ontology and epistemology and show how my view of the phenomenon intra-organizational coopetition has affected my study. Though, as a researcher, you could question why there is this need for a research philosophy. Easterby-Smith et al. (2002, p. 27) discussed this matter. In a twofold argument they elaborately summed up the benefits for a researcher to have a dedicated underlying philosophy. Firstly, when the research philosophy is known the researcher is guided through the process of selecting the right research methods. Secondly, when the philosophical framework is in place the researcher is less likely to do unnecessary work and can remain more focused.

Ontology is the philosophical field in which philosophers discuss the existence of reality (Bryman, 2008, p. 18). Ontology is often used to develop challenging questions on which we build theories and models. Ontology gives rise to different doctrines, which can be classified as dichotomies, over which philosophers have debated for centuries (Hammersley, 1992, p. 39). The doctrines within philosophical ontology oppose each other’s beliefs on the existence and appearance of reality. These dichotomies come in different forms, namely materialism and idealism, objectivism and subjectivism, abstract and concrete, and others. All these different views on the assertion of reality boil down to either reality exists independent of the observer, and therefore the reality continues to exist disregarding any observer. This means that any material is part of the reality. Alternatively, there is the thought of having multiple realities in which the existence of reality is dependent to the observer and is thus different for every single observer. The objective half of the dichotomy shows that external influences, such as an observer, do not change the nature of reality (Saunders et al., 2009, p. 110).

I believe that between these extremes a variety of perspectives can be found both arguing for example that a reality is there but we need to construct it to give it meaning, and that these constructions are socially constructed. My ambition is not to clarify all different ontological stands that exist but to explain how I view the phenomenon intra-organizational coopetition.

To connect ontology to my research, I will analyze situations in which I try to find patterns within the realm of internal coopetition. I strongly believe that not everyone in any firm is completely aware of coopetition. I therefore have to identify the underlying mechanism to really find the source of coopetition in the firm.
Logically, people are more focused on their jobs than the bigger picture and thus might not have identified the departments they coopete with or the intensity of coopetition.

People might not be conscious about coopetition taking place but they can certainly be aware of tensions in the workspace. Even without knowing or understanding the ‘label’ of coopetition people can still experience the contradictions happening within the department or amongst departments in the company. These tensions are, as discussed before in the theoretical parts, a result of the coopetition paradox. Their understanding of the coopetition’s presence can maybe be identified through asking questions or help them understand the coopetition reality. Perhaps people will change their behavior when they are told they engage in coopetition, which will obstruct and intrude the potential social patterns.

This being a social science research, I will try to reveal and include all necessary relationships and processes to discuss and argue for my results. The social ontology, the core of this research, has its own epistemology, which I will discuss in the section below. As described in the theoretical background, there are patterns within coopetition and with the limited research done on the intra-organizational level, I will explore to what extent I can find patterns for internal coopetition that correspond with the inter-organizational theories and models.

3.2 Epistemology
Epistemology is the discussion of the nature of knowledge. With its different schools of thought on what knowledge is and how knowledge can be obtained (Bryman, 2008, p. 13) it is important to show my understanding of this knowledge appropriation. In 2008, Saunders et al (2008, p. 108) designed the so-called research onion to depict the different stages of knowledge gathering from the ‘outer philosophical layer’ to the ‘inner empirical methods’.
In this section I will talk more about the different layers of Saunders et al. (2008). I will discuss all the terms described in Figure 5 and relate it to my study so that the reader has a better understanding of why I designed my research the way I did. The first and outer layer of the onion is the research philosophies as labeled in Figure 4, Interpretivism, Positivism, and Realism, and all of them have their own view on reality or their own ontology that is mirrored in their different view of the nature of knowledge or epistemology. This outer layer of the onion is largely discussed previously in the research paradigm. The epistemology of interpretivism is largely related to qualitative research in which its researchers are continuously involved in the ‘naturalistic inquiry’, or fieldwork in the natural setting (Williamson, 2002, p. 30). Additionally, Dervin (1992, p. 64) mentioned that the researchers with this type of research philosophy continuously try to interpret their environments by looking for patterns to ‘make sense of it all.’

On the other side of the spectrum, there is the epistemology of positivism (Williamson, 2002, p. 325). Remenyi et al., (1998, p. 32) use the following general definition of positivism as “a positivist approach to research implies that the researcher is working with an observable social reality, for which the end product of such research could be the derivation of laws or law-like generalizations.” The positivist philosophy is mainly applied to quantitative studies as real data is extracted from these realities with the set parameters. Interestingly, this ‘observable social reality’ is similar to the ontological dichotomy of objectivism, discussed earlier in this chapter. Therefore, there is a rather close connection to the nature of ontology and the nature of epistemology. I do not agree with the philosophy of positivism, especially not in my research. As stated by the French philosopher Comte (1848), everything follows logic and can be scientifically verified.
This is not the case for social sciences according to Ariely (2008) when he describes the irrational patterns and behavior of humans in different scenarios. Humans (e.g. social science) are maybe aware of their being, but they may hold prejudices or semi-truths to satisfy their ego unconsciously. In my research, I will try to find the underlying patterns and habits of people engaged in coopetition.

The last research philosophy that is argued for by Saunders et al. (2008) is epistemology of realism. Realism states that the researchers have the understanding that objects are independent of the human mind and senses, and through that reality is displayed (Saunders et al. 2009, p. 114). In other words by Phillips (1987, p. 205), it is defined as “the view that entities exist independently of being perceived, or independently of our theories about them.” This can be closely linked with the overall research philosophy discussed before in which I stated the different dichotomies. Realism would then fall under the objectivism.

In my research I will try to identify patterns, methods, and habits of departments within a specific organization. Even though the epistemology of interpretivism holds a truth by saying that the analyzed objects with natural sciences are of different nature than in social sciences, which can interpret themselves and their environment (Onwuegbuzie, 2000), I am confident that same research techniques and approaches can be used across natural and social sciences. However, some philosophies are more dominant in certain research fields. I argue for the fact that this research has not one specific research philosophy but rather a combination of realism and interpretivism. The coopetition relationship can occur and can sustain without the knowledge of the people taking in this relationship. As I argued earlier, people engaged in coopetition are often not aware of this relationship, or perhaps don’t have a total view on it. This supports the notion in realism where the reality is independent of the human mind. Though, the people involved are able to interpret and understand the coopetition, which might alter the reality. When these people are aware of coopetition they interpret the reality in a way that can construct a more precise meaning of their reality.

### 3.3 Research Approach

Further, the choice of the scientific approach is discussed and can also be seen as the second outer layer of Saunder’s research onion. The research approach and how the research should be structured can either be deductive of inductive. In some cases, the research can have a mix of both approaches such as with an explorative study. These approaches differ from each other and through a general introduction of both approaches with their benefits and drawbacks I will conclude what is the best fit for my thesis. Remember, this can be a fully deductive research, fully inductive research, or a combination of these two extremes.

**Deductive**

Bellamy (2012, p. 76) states, “the aim of deductive research is to test a statement that is formulated before we create or collect any data.” This means that researchers using this approach have to define a hypothesis before collecting and analyzing their data. As stated in the theoretical parts of my study, this study also has several hypotheses.
Deductive reasoning talks about building a framework and a procedure to find the right information and do the right observations (Bellamy, 2012, p. 77). This framework building makes this research approach more rigid. Moreover, the framework building inherits previous knowledge in the field of research allowing researching to accumulate knowledge and thus increase awareness and scope in the researched field. This framework building is present in my study in a way that inter-organizational theories are used to test for intra-organizational knowledge. Though, deductive researching can yield undesirable outcomes, because the hypothesis is tested with the risk of it being false.

**Inductive**

Just like deductive research or reasoning, the inductive approach starts with a philosophy. In deductive research this is shown through the hypothesis and with inductive research it is displayed through an initial question (Bellamy, 2012, p. 76). Adams et al. (2007, p. 29) states, “[inductive research] relies on the empirical verification of a general conclusion derivable from a finite number of observations.” Inductive reasoning aims to find patterns in a greater society in which the pattern reoccurs ceteris paribus (Adams et al., 2007, p. 27). Unfortunately, by trying to identify new patterns in a society or fixed setting there is a limited to no appropriation of knowledge, and there is no ‘standing on the shoulder of the giants.’ Inductive research might not be increasing the existing knowledge, but this approach is especially useful when there is very little literature in that field of research. There is relatively little literature available for intra-organizational coopetition, which makes this study partly inductive. Inductive research is a great method to conduct exploratory research.

In Figure 6, both deductive and inductive reasoning have been illustrated. This figure will help the reader to better understand the process a deductive or an inductive reasoning process.
When looking at previous literature there is a strong focus on deductive research (Luo, 2005; Tsai, 2002; Bengtsson, 2014). The hypotheses I provided earlier in the theoretical background shows that I would have a deductive reasoning throughout my thesis. To strengthen this deductive reasoning, through this research I add knowledge and insights to the young field of coopetition. Furthermore, the main target for my research is to find patterns and through these patterns find significant proof to accept or reject my hypotheses. In this research I use inter-organizational theories and models and test their applicability on the intra-organizational level. Therefore, one can say that deductive reasoning dominates the thesis. Yet, this study should be seen as an exploratory study rather than a strict deductive study as theories and models for intra-organizational coopetition are lacking. I will develop own measures and use conceptual works to develop new constructs, and thus inductive reasoning can also definitely be found back in this study. It would be improper to label my research either deductive or inductive as both approaches are represented. It would be more accurate to label this research as an explorative quantitative study.

*Quantitative or Qualitative*

The next part, which is not described by Saunders research onion, is a crucial part of understanding the research. I believe it is important to state and discuss what type of study you do in terms of quantitative or qualitative study. By picking either one, the research strategy options are already narrowed down. For example, by choosing a qualitative approach, it would not make sense to use a survey for the strategy and data collection parts. In my research, I believe that I can add more value to the field by collecting data through people and codify the information to statistically argue for the acceptance or non-acceptance of my hypotheses.
Therefore, this research will have a quantitative approach rather than a qualitative approach. Besides, the intra-organizational level concerning coopetition lacks literature (Bengtsson & Kock, 2014). I have extracted and adopted theories from the inter-organizational level, and with the quantitative approach I wish to justify these models for the intra-organizational level.

3.4 Research Strategy
To narrow down the methodology of the research more, the research strategy has to be argued for. There is an arsenal of primary data collection methods, under which: observation, experimentation, surveys, interviews, diary methods and case studies (Saunders et al., 2008; Adams et al, 2012). In the part above I argued why I opted for a quantitative approach and the use of information extracted from people. Since the approach has already been set, a couple data collection methods are rendering invalid. I decided to use the survey method as my main data collection method. This method allows me to send out the questionnaires in a more efficient and digital way to reach more people. Through my own observation I have realized that people tend to be more open or honest when not confronted with business related questions face to face. Rather, having the sample selection answer the question on a computer screen anonymously might prove to yield more truthful answers.

3.5 Sampling selection
The data collection of the managers and the executives took place in the headquarters of a high-tech firm in Pacific Asia. The reason for mining data in a technology company is that coopetition has been shown to be common in industries characterized by the uncertain market with an increased communications necessity due to the fast paced industry. In addition, knowledge in a technology company is a big factor that can set firms apart. Since I argue that knowledge is one of the main ‘goods’ in the coopetition relationship, a technology firm was the ideal industry. Ideally, I’d wish to send out the questionnaire to all employees in the firm, but due to security concerns and practicality concerns, we have scaled it down and took a couple people to represent the important departments in this company. The scope of the participants includes managers from various departments, namely, marketing, sales, testing, R&D, manufacturing, customer services, and finance. The 102 invitees were carefully selected to fit the profile. From the selection, a total of 61 employees have filled out/completed the questionnaire resulting in a response rate of 60%. A crucial part of the profiling is about their involvement in a range of (virtual) teams, project groups, taskforces, departments, and other forms of think tanks.

To clarify, ‘Virtual teams represent interdependent groups of individuals who work across space, time, and geographical boundaries with communication links that are heavily dependent upon advanced information technologies’ (Hambley et al., 2007; Baruch & Lin, 2012, p. 1155). This resulted in only using managers or higher to mine appropriate data and responses. The participants have sufficient knowledge of the company to provide this research with quality answers. All responses were truly voluntary.
To deal with the challenges of missing data, or not completed surveys it has been decided to only research the completed sets of the questionnaires. Any uncompleted questionnaires were labeled as an invalid response. Each of the questions in the questionnaire has multi-item scales derived from relevant prior studies.

There are some drawbacks to this sample selection. One of the main drawbacks is the size. The size is not large enough to generalize the findings across the industry, let alone across firms across the world in different industries. Furthermore, I was unable to derive an equal distribution from headquarters and subsidiaries. The headquarters are overrepresented which might lead to future research in a more complete setting. Another drawback is the culture difference. Even though data collection was primarily in one physical place, the international allure of the company attracts people from different countries and cultures. This means that different cultures have participated in the survey. However, culture has not been accounted for and might be a potential influencer for the data analysis. As discussed before, I am confident that these drawbacks of the sample selection are not of major influence in this study for the reason that this study is explorative. The aim of this study is to find whether internal coopetition and its attached variables (i.e. tension, coopetition capabilities) have any significant effect on organizational learning. I am exploring the dimensions of importance in this area. This starting point can be of great help for future studies to more precisely address these mentioned drawbacks.

3.6 Survey Development

The survey has 4 constructs and control variables. In this part I will discuss how the construct have been measured and how the Likert Scale per construct is developed. In Appendix 1 ‘Measured Items’ a table overview can be found for every construct and its grouped Likert items. I grouped the Likert Items together, after which I summarized these Likert Items into one Likert Item. The Likert Items that are found in Appendix 1 are thus grouped Likert Items from which a Likert Scale is derived.

**Construct 1 - Coopetition Intensity (independent)**

Coopetition intensity is a crucial measure in my thesis as this defines how strong the tension developed as a result is and as it is assumed to effect the outcome, organizational learning. The coopetition intensity can be broken down by two separate variables, the competition intensity and the cooperation intensity as long as both of the variables are present at the same timeframe within the relationship between two actors. Coopetition intensity has been researched by Luo et al. (2006) and had significant outcomes for financial performance and customer service performance. Luo et al. (2006) based their work on Antia and Frazier (2001), and Narver et al. (2001). I have in line with Luo et al. (2006) made a distinction between cooperation and competition for the testing of coopetition intensity. Five items where used measured on a 5 Likert scale to measure the intensity of the cooperation part of the relationship exploring if the interdepartmental social and communicative relationships where strong and if the relationships with other departments where mutually gratifying and highly cohesive. The second part of the coopetition intensity is the competition on departmental level.
I have used 4 different Likert items measure competition and if the own departments have the highest priority at the expense of other departments. The items used are presented in Appendix 1.

Construct 2 - Internal Tensions (dependent)
Tension arises due to the coopetition intensity as I have argued for in previous discussions. Even though, tensions have been proven to occur with coopetition relationships, I will test this construct independently by drawing upon experiences and emotional feelings from employees involved in coopetition relationships. Bengtsson (2013, 2014) used tension in multiple researches and I will adopt her measurements to a great extent. The tension measures, the cognitive constructions, and emotional reactions that results from the paradox of the coopetition relationship, can be assumed to be depending on the coopetition paradox. For Internal Tensions I have grouped the Likert items into four different questions. First, ‘Do departments share knowledge but never lose sight of their own gains?’ Second, ‘Do departments work together while fighting for the biggest departmental benefit?’ Third, ‘Are there strategic dissimilarities that cause tensions?’ Lastly, ‘Are tensions caused by departmental cultural differences?’ These questions are derived from 9 Likert items and will help to obtain a more complete overview of Internal Tensions.

Construct 3 - Coopetition Capabilities (independent)
The coopetition capability construct is added to my research as a tension mediator for the performance outcome organizational learning. This construct will mainly focus on the management of relationships and the ambidexterity of the interviewees according to their own perception. These results should be used with caution as not all employees might be skilled self-reflectors and thus not be fully aware of their capabilities. To cover for this potential drawback, I have included more than one person per department to represent the department. In this way there will be a more balanced outcome per department. By testing ten different Likert items I have grouped them into four questions. The construct and its different Likert items are sourced from the works of Schilke and Goerze (2010) who researched the alliance management capability. Firstly, ‘Do departments help other departments without risking their own competence?’ Secondly, ‘Do departments have a clear idea on how to balance and adapt to changing relationships?’ Third, ‘Are contradicting demands manageable to obtain goals?’ Lastly, ‘Do departments find opportunities to push the relationships forward?’
**Construct 4 - Organizational Learning (dependent)**

**Definition:** The final construct regards organizational learning and thus the knowledge within the firm and the increase or decrease thereof. The organizational learning in relation to internal coopetition has not been researched and thus I developed my own constructs and relied upon other questions, which have been used in a different setting. To clarify, I adopted an organizational learning question from Bengtsson (2014) in the inter-organizational theory setting and from Schilke and Goerze (2010) in the organizational knowledge theory setting. This resulted in a total of 8 different Likert items from which four questions derive, namely ‘Can departments learn and integrate knowledge from coopetition partners,’ ‘Has the department been able to increase knowledge,’ ‘What is the main source of information within the company,’ and to increase to solidity of the construct I added a reversed coded question ‘Has the relationship led to any loss of important knowledge.’

**Control variables**

To make sense of the different constructs as argued above. I installed several control variables in the questionnaire. There are a total of 6 control variables to cross check the results with. Because the data is not about a firm but about individuals or department representatives, I will use control variables that are based on real people. The first control variable is Time in the Firm (TNF), ‘How long have you worked for this company?’ Secondly, I will use age as a control variable, ‘What is your age?’ Though, I will not only use age (AGE) because someone can be rather old or have life experiences but the ‘business age’ (BGE) might still be young. Therefore, I will also ask ‘How long have you been doing business for?’ Lastly, I will use the title of the specific person (TIT) by asking, ‘What is your title?’ The title represents the amount of responsibilities in the firm. Lastly, I believe it is important to test how many (potential) coopetition relationship the respondent has had in the past, ‘Please state the number of departments you have held relationships with (except your own department) in last three years.’

### 3.7 Analysis Methods

After the data collection from the sample the data was coded for analysis. Since I used the 5-point Likert Scale I coded the data accordingly: “1=strongly disagree”, “2=disagree”, “3=neutral”, “4=agree”, and “5=strongly agree”. Parts of some constructs have reversed coding to test the participants answers. For the reversed coding I coded the labels in the opposite direction from “5=strongly disagree” to 1=“strongly agree.”

With the coded data, I continued by using SPSS for the statistical and significance tests. The first conclusion was to decide upon the analysis methods. Previous literature states that Likert data can be interpreted as interval data (Johns, 2010, p. 9). Likert originally argued that “Survey respondents actually construe the response scale in terms of evenly spaced points along an underlying attitude continuum” (Johns, 2010, p. 9) and thus analysis based on the mean and standard deviation can be used to interpret the data. I will use the mean derived from the Likert Items and use the mean as my Likert scale. Though, Appendix 1 shows what grouped Likert Items I have used to construct the Likert Scales.
A correlation matrix will be used for all the variables, namely: Coopetition Intensity, Internal Tensions, Coopetition Capabilities, and Organizational Learning. The Pearson Correlation has been conducted through IBM’s SPSS program. A Pearson Correlation is a way to measure how strong the linear relationship is between two variables. In addition to the correlation in matrix/table form, a Scatter Graph can be plotted to have a more visual representation of the data (Laerd, 2013a). Based on this matrix, weaknesses in the research model can be identified after which the dataset can be changed accordingly.

The Regression Analysis has been conducted through IBM’s SPSS program. The reason for doing a Regression Analysis is because I want to find out the value or predictability of the dependent variable based upon independent variables (Laerd, 2013b). To test for the Coopetition Intensity’s relation and impact on the Internal Tensions, I have used a Simple Linear Regression Analysis. This explains a crucial part of the model. To test the complete model I have used a Multiple Linear Regression Analysis in which Organizational Learning acts as the dependent variable. Interestingly, I assign the Internal Tensions as a predictor or independent variable in addition to Coopetition Intensity and Coopetition Capability. I will look at the R square, the ANOVA’s significance, and the Coefficients’ significance. In the Results all the data is presented and explained with the respective SPSS tables.
4. Results
In this part I will describe and explain the results that derived from the questionnaire and the data analyses. The results part is divided into two parts, namely the Correlation Matrix and the Regression Analyses. However, I will not connect the results to the theoretical framework in the results part, this will be done in the Discussion and Conclusion part.

4.1 Descriptive Results
The descriptive results will help the reader to understand the results through the use of, pie charts and tables of the captured data. This is introductory to the data analyses with the correlation matrix and regression analyses. The participants in this research have certain characteristics, which will be described here. The descriptive answers presented here are: years worked in company, years of experience, and cultural background. The descriptive data are chosen because of their indicative nature. For example, the younger the people are, the less stable the results are. This is because younger, inexperienced, people have a lesser understanding of business and the internal coopection. However, when the people tend to be older and more experienced, the results will be stronger as their input is more meaningful and backed up.

As the pie charts indicate over half of the respondents have done business for 8+ years and have been in the company for more than 3+ years. This means that people understand the company and have a solid business experience rendering their answers more meaningful. The participants are dominantly of Western background, which might skew the data towards a Western populations rather than representing a global workforce.

Furthermore, shown in Appendix 6, through the use of scatterplots an attempt was made on explaining the dependent variables Coopetition Intensity and Internal Tensions. However, the scatterplots do not show any positive or negative correlations. Therefore, we cannot explain the independent variables (Coopetition Intensity and Internal Tensions) with the descriptive variables (Years worked in company and Years of Experience). Though, it remains important for the reader to understand who has filled out the questionnaire and from where the data comes.
To further explain and measure the descriptive variables the measures of central tendency and the measures of spread need to be taken into account. The measures of central tendency are observed using the median or mean. The measures of spread include standard deviations (Laerd, 2013d).
Table 1 provides an overview of the ranges, means, number, and standard deviations of the descriptive data. This helps to further analyze and understand the descriptive statistics of this research.

### Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years with Company</td>
<td>61</td>
<td>.5</td>
<td>11.0</td>
<td>4.910</td>
<td>2.9993</td>
</tr>
<tr>
<td>Years of experience</td>
<td>61</td>
<td>.5</td>
<td>24.0</td>
<td>11.057</td>
<td>5.9729</td>
</tr>
<tr>
<td>Age in years</td>
<td>61</td>
<td>23.0</td>
<td>55.0</td>
<td>36.885</td>
<td>7.0571</td>
</tr>
<tr>
<td>Coopetition Intensity</td>
<td>61</td>
<td>2.50</td>
<td>4.18</td>
<td>3.2410</td>
<td>.41140</td>
</tr>
<tr>
<td>Internal Tensions</td>
<td>61</td>
<td>2.0</td>
<td>4.8</td>
<td>3.384</td>
<td>.7029</td>
</tr>
<tr>
<td>Coopetition Capability</td>
<td>61</td>
<td>1.7</td>
<td>4.4</td>
<td>3.618</td>
<td>.4617</td>
</tr>
<tr>
<td>Organizational Learning</td>
<td>61</td>
<td>3.2</td>
<td>4.6</td>
<td>3.794</td>
<td>.4061</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>61</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Descriptive Data – SPSS Output

Lastly, the histograms give an overview of the distribution and the frequencies of the data per variable (Laerd, 2013c). The histograms provided in this research are for the Coopetition Intensity, Internal Tensions, Coopetition Capabilities, and Organizational Learning variables. The histograms of the tested variables are appended in appendix 7.

### 4.2 Results Statements

Before diving into the analyses, a more thorough presentation of the data will be given. As most questions were stated in the form of a Likert scale the most agreed with statements are mentioned below.

When asked how the respondents feel about collaborating with competitors (read: other departments) they answer to feel somewhat happy (64%), pleasure (45%), and satisfied (36%) when collaborating with competitors. On the other hand, the respondents also ‘do not really feel trust’ (32%) and are somewhat annoyed (32%). This is a classic sign of contradicting emotions when dealing with competitors. These statements correspond with the descriptive statistics for the variable Coopetition Intensity.

The contradiction that makes up for most of the tensions and/or conflicts in coopetiting relationships is to not be able to establish close relationships (50%) or when departments compete and cooperate in different areas (50%).
Though, relationships have remained effective over time (45%). This shows that there are some tensions among the coopetitive relationships. However, these tensions were not destructive, as the relationship remained effective. Therefore, the Coopetition Capability was working as hypothesized in the model.

The biggest benefits the respondents identified from the coopetition are the improved flexibility (77%), ability to add new products (72.7%), and improvement or revisions of existing products (72.7%). In terms of intra-organizational learning, the respondents said to have a ‘strong capability to learn and absorb new information from coopetition partners’ (78%). As a result of the coopetitive relationship, the different departments were able to keep their competitive advantage (77%). The Organizational Learning variable is on par with the given statements, and thus backs up the mean as given in Table 1 above.

Lastly, it was asked what reasons the respondents had to enter into these coopetitive relationships. The main motivations are to increase capacity (86%), improve efficiency (82%), and increase knowledge in the department (81%).

### 4.3 Correlation Matrix
To start with the data analysis, all the variables have been included here to check for the significant relationship between each variable – regardless of the independence or dependence among the variables. The correlation matrix can be found in Table 1.

<table>
<thead>
<tr>
<th></th>
<th>Coopetition Intensity</th>
<th>Internal Tensions</th>
<th>Coopetition Capability</th>
<th>Organizational Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coopetition Intensity</strong></td>
<td>Pearson Correlation</td>
<td>1</td>
<td>.524**</td>
<td>.152</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.241</td>
<td>.003</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>61</td>
<td>61</td>
<td>61</td>
</tr>
<tr>
<td><strong>Internal Tensions</strong></td>
<td>Pearson Correlation</td>
<td>.524**</td>
<td>1</td>
<td>-.096</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.462</td>
<td>.007</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>61</td>
<td>61</td>
<td>61</td>
</tr>
<tr>
<td><strong>Coopetition Capability</strong></td>
<td>Pearson Correlation</td>
<td>.152</td>
<td>-.096</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.241</td>
<td>.462</td>
<td>.484</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>61</td>
<td>61</td>
<td>61</td>
</tr>
<tr>
<td><strong>Organizational Learning</strong></td>
<td>Pearson Correlation</td>
<td>.369**</td>
<td>.339**</td>
<td>.091</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.003</td>
<td>.007</td>
<td>.484</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>61</td>
<td>61</td>
<td>61</td>
</tr>
</tbody>
</table>

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

Table 2: Correlation Matrix
Besides analyzing the variables I have also inserted the control variables in the correlation matrix. However, because of its large size it has been inserted in Appendix 2 ‘Correlation Matrix + Control Variables’. The control variables did not show any significance on the independent or dependent variables. This indicates that coopetition intensity and coopetition tension has an impact independent of these control variables. Moreover, these control variables do not explain the intensity or the tension. For that reason I will ignore the following dimensions in my further research, namely Age, Years in company, Years of Business Experience. To continue with Table 2, I will go through the matrix and discuss each variable separately and its relation to another variable.

Coopetition Intensity shows a significance of .000 in relation to Internal Tensions. This p-value is thus considered significant on a 0.001 level. The value of this significant correlation is .524. This positive note means that for every unit of increase in Coopetition Intensity the Internal Tensions will increase with .524. Furthermore, we can also see that the Coopetition Intensity is significantly correlated with Organizational Learning with a p-level of .003. This high significance level has a correlation value of .369. Similarly, this shows that with every increase of one unit Coopetition Intensity, the Organizational Learning increases with .369.

When looking at the Internal Tensions and how that variable correlates with Coopetition Capability and Organizational Learning we see the following. For the correlation between Internal Tensions and Coopetition Capability, Table 1 shows there is no significant correlation and thus this can be ignored for further research purposes. The Internal Tensions in correlation with Organizational Learning is significant with a p-level of .007. The Internal Tensions in correlation with Organizational Learning has a value of .339. As described before, this means for every unit of increase in Internal Tensions the Organizational Learning will increase with .339. This is an interesting finding as it shows that Internal Tensions has a potential positive effect on Organizational Learning, whereas the previous literature and I argue for a negative significant correlation.

The Coopetition Capability variable does not correlate with any of the variables in the correlation matrix. This is an indicator that Hypotheses 4 and 5 will be rejected. The Coopetition Capability should have a significant correlation with Internal Tensions and Organizational Learning before the mediator analysis is continued. I have not checked the feasibility for a moderating role in Coopetition Capability, but future research can definitely opt for such approach. The other Hypotheses, 1, 2, and 3 are still able to be accepted, but this will depend on the regression analyses.

4.4 Regression Analyses
The first Regression Analysis is a Simple Linear Regression where the Coopetition Intensity is tested to predict the Internal Tensions. The second Regression Analysis is another Simple Linear Regression Analysis to test the direct effect of Coopetition Intensity on Organizational Learning.
The third and last Regression Analysis is a Multiple Regression Analysis where the Organizational Learning is predicted based upon the independent variables, namely Coopetition Intensity and Internal Tensions. Please note that Coopetition Capability is left out as the correlation matrix showed there was no significant correlation between Coopetition Capability and the other variables.

**Simple Linear Regression**

The Simple Linear Regression is done to test if the Coopetition Intensity causes Internal Tensions to increase as the literature in the theoretical framework suggests. This Simple Linear Regression’s outcome will help to assess if Hypothesis 2 can be accepted or should be rejected.

One of the SPSS outputs is the R Square under the Model Summary. The Model Summary, including the R Square, is appended under Appendix 3 together with the ANOVA test. The R Square is .274 meaning that the Coopetition Intensity explains 27.4% of the Internal Tensions. To measure the fitness of this preliminary model the ANOVA test is done. The ANOVA table with outcomes can be found in Appendix 3. The ANOVA showed a p-level of lower than .000. Therefore, it can be concluded that the model is a good fit.

The Coefficients is perhaps the most important outcome of this analysis. Table 2 shows the Simple Linear Regression Coefficients table based on the SPSS output. The Coopetition Intensity has a value of .895 with p=.000. This concludes that we can accept Hypothesis 2, thus Coopetition Intensity causes Internal Tensions to increase.

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Constant)</td>
<td>.484</td>
<td>.619</td>
<td>.783</td>
<td>.437</td>
</tr>
<tr>
<td>Coopetition Intensity</td>
<td>.895</td>
<td>.189</td>
<td>.524</td>
<td>4.722</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Internal Tensions

Table 3: Simple Linear Regression Coefficients

The second Simple Linear Regression Analysis is conducted to test the Coopetition Intensity and its direct effect on Organizational Learning. As discussed for Hypothesis 1, Coopetition Intensity increases Organizational Learning.

The Model Summary (R Square) and the ANOVA test can be found in Appendix 4. The R Square of this second analysis is .136. The R Square tells us that Coopetition Intensity explains Organizational Learning for 13.6%. Understandably, this number is low as Organizational Learning consists of many aspects as discussed in the theoretical framework. The ANOVA test is concluded with a p-level of .003, meaning the model is a good fit.
The Coefficients table is shown under Table 3. The p-level is .003, meaning that the relation between the Coopetition Intensity and the Organizational Learning is significant, and with a coefficient value of .364, we can say that for every unit of increase in Coopetition Intensity, the Organizational Learning will increase by .364. Thus, we can accept Hypothesis 1: Internal Coopetition Intensity increases the Organizational Learning.

### Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Constant)</td>
<td>2.614</td>
<td>.390</td>
<td>6.699</td>
<td>.000</td>
</tr>
<tr>
<td>Coopetition Intensity</td>
<td>.364</td>
<td>.369</td>
<td>3.048</td>
<td>.003</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Organizational Learning

Table 4: Second Simple Regression Analysis Coefficients Table
Multiple Regression Analysis

The Multiple Regression Analysis is conducted to test and determine hypothesis 3 and the complete model as depicted in Figure 3. Through this analysis the Organizational Learning will be tested on whether the independent variables Coopetition Intensity in combination with Internal Tensions in one model are explanatory for Organizational Learning.

The Model Summary and the ANOVA test are appended in Appendix 5. The R Square for this analysis is .166. Therefore, the Coopetition Intensity and Internal Tensions together explain Organizational Learning for 16.6%. The ANOVA has a p-level of .005 meaning that the model has a good fit and the data complements each other sufficiently to continue.

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>2.558</td>
<td>.389</td>
<td>6.578</td>
</tr>
<tr>
<td></td>
<td>Coopetition Intensity</td>
<td>.260</td>
<td>.139</td>
<td>.263</td>
</tr>
<tr>
<td></td>
<td>Internal Tensions</td>
<td>.116</td>
<td>.081</td>
<td>.201</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Organizational Learning

The Multiple Regression Analysis Coefficients Table depicted in Table 4 is the table where we will look for the Beta (B) and its significance. The Coopetition Intensity Beta, the value of the regression is .260 at p-level .066.

Interestingly, when the Internal Tensions are added to the model as we can see in Table 4, the Coopetition Intensity is lower than when only the Coopetition Intensity is used to predict the Organizational Learning. The Coopetition Intensity without Internal Tensions is .364, when the Internal Tensions are added to the Regression Analysis the Coopetition Intensity drops to .260. However, the Coopetition Intensity in the model with Internal Tensions is not significant. Yet, it is a noticeable finding that Internal Tension reduces the Coopetition Intensity relationship with Organizational Learning. Furthermore, Internal Tensions has a Beta of .116, yet with a p-level of .158. The Internal Tensions itself is not negatively or significantly associated with Organizational Learning, though we were not looking for the sole relationship of Internal Tensions and Organizational Learning.
5. Discussion
With the Discussion part I mainly aim to discuss and integrate the findings with previously mentioned literature. The findings will ultimately complement or argue against the literature, however, since little research has been done in the intra-organizational part of coopetition, this discussion will focus on the adoptability of the inter-organizational coopetition theories and models in the intra-organizational coopetition level. Additionally, the explorative nature of this research will open doors for future research and perhaps raise more questions that spark academics’ interest.

Adoptability of inter-organizational coopetition models
The research model as depicted in Figure 3 shows the different variables and the relation between each of the variables. However, most of these variables have not been used in the intra-organizational sense. In the theoretical framework I mention to partly use inter-organizational level theories and models to come to my hypotheses. The first variable, Coopetition Intensity, is based on the works of Bengtsson et al. (2013, 2014) whom focus on the inter-organizational theories towards the firm. Interestingly, none of these researchers in the intra-organizational coopetition level coin the idea of a paradox due to the two opposing forces. For that reason, I used inter-organizational measures and models to support my theory. In multiple inter-organizational coopetition articles (Bengtsson et al., 2014; Das & Teng, 2000; Raza-Ullah et al., 2014) they discuss the different forms of tensions with external factors and drivers that finally affect employees in the firm. Through my work I have shown that tensions caused by internal forces, as measured by inter-organizational levels, are present. So the inter-organizational models were easily adjusted by merely changing the wording and restructuring the sentences. The difference is in how these tensions come to be, and in this case the dynamism behind tensions is internal factors and drivers. The departments might have imposed certain rules and regulations or hinder or support knowledge sharing or protection that causes tensions between employees from different departments. Since the Coopetition Intensity - based on intra-organizational measures – has an increasing effect on the Internal Tensions – based on inter-organizational measures -, we can conclude that Internal Tensions can be measured by inter-organizational scales. Thus the inter-organizational tensions model (Bengtsson et al., 2014) is adoptable for intra-organizational tension measurements.

The other variable in the research model that heavily depends on inter-organizational level theories and models is the coopetition capability. This coopetition capability has not been argued by any of the intra-organizational coopetition articles. The few articles in the inter-organizational level that talk about it (c.f. Bengtsson et al., 2014; Raza-Ullah & Bengtsson, 2014) are on the inter-organizational level. In order to adjust the inter-organizational coopetition capabilities into the intra-organizational level, I have left out certain measurements (Likert items) that other researchers have used. I have also adjusted to wording to be more appropriate for an internal setting, such as from ‘partners’ to ‘departments’. This helped the interviewee to understand the Likert items more precisely.
As argued before, I believe it is important to find coopetition capability measurements and practices to sedate the internal tensions caused by coopetition intensity. The coopetition capabilities as proposed in this research and the measurements in the survey do not mediate the situation significantly according to the results. This could mean that the coopetition capabilities from the inter-organizational levels are not transferable or the coopetition capabilities are not of importance in the intra-organizational coopetition.

One could thus say that the coopetition capabilities, which have been used in the inter-organizational level, cannot be adopted in the intra-organizational level. However, I should use the data sample in this research with caution as this is an explorative study with a relatively little sample size. It has been concluded that the internally motivated and externally motivated tensions can be measured similarly. Thus, most of these tensions are similar in nature. When the tensions are similar on the intra- and inter-organizational level, the coopetition capabilities can be argued to function for both tensions. The data in this research does not support this, yet I am confident that a more thorough research should be dedicated to the coopetition capability measures, especially for the intra-organizational level of coopetition.

The last variable is Organizational learning, which shows to be influenced by Coopetition Intensity. This has been argued in the theoretical framework before. Yet the R-Squared show that Coopetition Intensity does not account for much of the increase of Organizational Learning. I believe that Coopetition Intensity in the future will have increased R-Squared as competitors more often start cooperative efforts compared to the past. As a result more employees become aware of these happenings and the influx in organizational knowledge will be apparent.

Previous researches argue that organizational learning is not a guarantor to become successful, yet it stabilizes the overall performance (March 1991, p. 83-84). If this organizational learning can have a stable increase, partly due to balanced coopetition intensity, this will have a positive impact on the firm. When the firm has the capability to manage coopetition tensions and knows how to increase organizational learning through coopetition, this can be seen as a competitive advantage from my point of view. March (1991) disagrees that organizational learning creates competitive advantages, but part of organizational learning is to understand how to balance cooperative and competitive intensities while they’re high. This internal competitive advantage (the ability to balance coopetition intensity) is thus part of organizational learning and therefore organizational learning causes (internal) competitive advantage. A summary of this process is depicted in Figure 7 below.

![Figure 10: Organizational Learning is Competitive Advantage](image_url)
**Explorative Nature**
The explorative nature of this research has opened new paths to research intra-organizational coopetition questions. This research is the first of its kind by integrating internal tensions and coopetition capability measures into the research model. The methods and the research model should definitely be adopted in future researches though the sample size and its breath need to be increased to allow for generalization. The results from this research are preliminary but are supporting the rather small intra-organizational level amongst coopetition articles. I will continue by discussing how my results may have altered the intra-organizational coopetition field.

The intra-organizational coopetition articles do not use internal tensions or coopetition capabilities. I have argued that when these variables would be added to the respective research models the research model would more closely depict reality. Especially internal tensions show to be adoptable from the inter-organizational level to the intra-organizational level. The question remains, does one need to include both of these variables while they are tested for the possibility of cancelling each other out.

After all, the coopetition capability is only introduced to manage the increasing tensions due to high coopetition intensity. Yet, most of the coopetition articles do not mention either or show this in their limitations of the research. I believe the variables should be added in future studies to have a more realistic and more precise prediction on coopetition and the measured effect in the real world. Besides, when testing the complete model through a Multi Linear Regression Analysis for example, all variables are taken into account and thus the variables can have a direct effect on the dependent variable(s).

For example, Luo et al (2006) have also measured coopetition intensity to conclude on the hypothesis if high coopetition intensity increases the performance financially and of the customer services. Their hypothesis is accepted through empirical testing. I believe the weakness of their study, which I have accounted for, is the lack of measuring of internal tensions. My results show that when internal tensions are added to the model, which asks if high coopetition intensity increases organizational learning, reduce the effect of coopetition intensity on organizational learning. A similar observation might be made by Luo et al (2006)’s study and thus different or non-significant results as a conclusion. A similar discussion can be made for the other four intra-organizational articles that fail to add internal tensions or coopetition capabilities to their research efforts and thus perhaps concluding on skewed results.

However, the coopetition capabilities have not been found to show any significance. Yet, coopetition capabilities are needed when internal tensions are present to reduce the effect of internal tensions on coopetition intensity and the dependent variable, in this case organizational learning. The coopetition capabilities have been scaled from a couple grouped Likert Items as shown in Appendix 1. I suggest the Likert items for coopetition capabilities to be changed in future researches. This study adopted the Likert items from inter-organizational level theories, maybe it will improve future researches that discuss coopetition capabilities to truly develop own Likert items or scales and back up the argument solely based on intra-organizational coopetition articles or other intra-organizational dimensions from other studies.
When the coopetition capabilities had been added to the previous literature on intra-organizational level of coopetition there might have been a change in results, which would have altered the aim of the coopetition field. Albeit no significance has been found here, more efforts should pursue the coopetition capabilities to manage the paradox that rises due to increasing cooperative and competitive intensity resulting in the potential of an unbalanced tension (Lado et al., 1997; Das & Teng, 2000; Park & Gnyawali, 2014; Wu, 2014).

In this research, I have adopted theories and models from the inter-organizational coopetition level. Interestingly, inter-network theories and models can also be drawn from. Each department can be seen as a firm taking part in a network for a greater good. Unfortunately, the inter-network or network coopetition level is not well researched and thus appropriate models are not be available at the time of writing. Similarly, another level of coopetition research, the individual level, can also be drawn from in future studies to ultimately have a more holistic overview of coopetition and how certain coopetition traits can be transferred across coopetition levels. When this pinnacle of understanding about coopetition has been researched, managers can more confidently adopt coopetition measures to increase their performance outcome such as organizational learning or customer service performance (Luo et al., 2006).
6. Conclusion
The conclusion part of this thesis will finalize the results as described in the Results section and give a definite answer on the research question. The hypotheses and the purpose of the research will be highlighted and additionally the practicality for managers for real world implementation will be discussed. This research complements the young field of intra-organizational coopetition through a paradox lens (Raza-Ullah et al., 2014, p. 198). The results will help to gain an understanding of the adoptability of inter-organizational theories and model in the intra-organizational coopetition field.

6.1 Research question(s) & Hypotheses
The main question as stated in the Introduction of this research comprises of three questions formed as one, as stated here:

(1) How does internal coopetition intensity and resulting internal coopetition tension affect organizational learning and (2) does internal coopetition capability mediates the internal tension affecting organizational learning within a firm in relation to coopetition intensity?

By answering this question I aim to contribute value to the intra-organizational coopetition field. It has been evidenced that the studies within the realm of the intra-organizational level are not sufficient and more research needs to be done. None of the researches in this field focused on organizational learning, organizational learning is definitely an important factor in the success of the firm (March, 1988) and thus a gap presented itself in the intra-organizational coopetition level. The answer of this question is based on the data extracted from a high-tech firm in Asia.

When dissecting the question by which I fulfill the purpose we can identify three sub-questions. These questions are answered through testing the corresponding hypotheses. Below, in Figure 8 the sub-questions and the respective hypotheses can be found.
1. Does internal coopetition intensity result in internal coopetition tension?
H2: Internal Coopetition Intensity causes Internal Tensions to increase.

2. Does internal tension affect organizational learning within a firm in relation to coopetition intensity?
H1: Internal Coopetition Intensity increases the Organizational Learning.
H3: Internal Tensions has a negative effect on the relationship between Coopetition Intensity and Organizational Learning.

3. How does internal coopetition capability mediate the internal tension affecting organizational learning within a firm in relation to coopetition intensity?
H4: Coopetition capability reduces (unbalanced) tension within a firm.
H5: Coopetition capability has a positive effect on Organizational Learning.

Figure 11: Sub-questions + Hypotheses

Question 1
The first question, the first part of the purpose question, is as follows: “Does internal Coopetition Intensity result in Internal Coopetition Tensions?” The results, and specifically Table 2 Simple Linear Regression Analysis, show that high Internal Coopetition Intensity increase Internal Coopetition Tensions. This conclusion has been made before for the inter-organizational level, but this result is new for the intra-organizational coopetition level. Future intra-organizational research should include internal tensions caused by high coopetition intensity. The practical application of this result will be described in the Managerial Advice below.

Question 2
The second part of the research question is where the most important findings are. The second part of the question is as follows: “Do Internal Tensions affect Organizational Learning within a firm in relation to Coopetition Intensity?” This question tries to answer the relation between the independent variable Coopetition Intensity and dependent variable Organizational Learning. In order to do so two hypotheses, hypotheses 1 and 3, are empirically tested with a Simple Linear Regression Analysis and Multiple Regression Analyses. Table 3 shows the results for hypothesis 2. The results are significant meaning hypothesis 2 is accepted. An increase in Coopetition Intensity directly increases the Organizational Learning. Yet, when the whole model, minus the Coopetition Capabilities, is tested, as depicted in Table 5, the results are not significant anymore. Therefore, we have to reject hypothesis 3. Nonetheless, Internal Tensions do affect the relationship between Coopetition Intensity and Organizational Learning negatively. The fact that this effect is not significant does not mean this finding is useless. This finding paves the way for future researchers to find if Internal Tensions affect the relationship between Coopetition Intensity and Organizational Learning significantly on a larger scale, including more firms or employees in their sample size.
**Question 3**
The last part of the research question, as shown in Figure 8, is “How does internal coopetition capability mediate the internal tension affecting organizational learning within a firm in relation to coopetition intensity?” The reason the question begins with ‘how’ and not with ‘if’ and thus asserting a link between coopetition capability and internal tensions is evidenced is due to the notion of adopting inter-organizational coopetition level theories. Still, the unknown part is how this link between coopetition capability and internal tensions affects the relationship between coopetition intensity and organizational learning. This question can be answered by testing its two linked hypotheses. Hypotheses 4 and 5 are both rejected, as Coopetition Capabilities in this research does not show any significant correlation with any of the other variables. Therefore, the quest to find the appropriate coopetition capabilities on the intra-organizational coopetition level continues. It should be noted that the research has been conducted in one firm only and thus it is possible that the manager’s ambidexterity (what I have tested for in the coopetition capabilities) does not work in this firm specifically. As I suggest in the Limitations, a bigger sample size will provide more solid results.

In conclusion, this research shows findings for Coopetition Intensity in relation to Internal Tensions and Organizational Learning. Yet, Coopetition Capabilities remain unknown, as I had to reject hypotheses 4 and 5. Coopetition Intensity on the intra-organizational level explains internal Tensions. Coopetition Capabilities has to be further and more explicitly researched to find the right coopetition capabilities (if any) for intra-organizational coopetition. Coopetition Intensity affects Organizational Learning but the fuller model, including Internal Tensions, does not show the desired (0,01) significance yet, though a bigger or more diverse sample size with a different questionnaire might increase the significance.

**Coopetition Intensity**
Coopetition Intensity has been argued in previous intra-organizational coopetition literature (Luo et al., 2006; Tsai, 2002). The measures for this variable are thus embraced in the academic field, and therefore I drew upon the measures of Luo et al. (2006). For this variable no new knowledge has been provided by this research, however the affects this variables has on other variables has been discussed and adds to the literature of intra-organizational coopetition.

**Internal tensions**
This study is unique in the way that Internal Tensions have not been applied to previous intra-organizational research models before. The addition of this variable to this niche coopetition field will enable future researchers to design a closer-to-reality research model. The Internal Tensions variable is true addition to the literature and should be used in future research models alike.
Coopetition Capabilities
The independent variable Coopetition Capabilities has not proven any significant results in this research. For that reason, I fail to add new insights regarding coopetition capabilities. Yet, when Internal Tensions are present in the workplace caused by Coopetition Intensity, coopetition capabilities should be integrated in the company to rebalance the coopetition and its paradox.

Organizational Learning
Organizational learning is used as a dependent variable in this research and is not necessarily limited to the coopetition literature. Organizational learning happens regardless of coopetition. Though, it can be concluded that Internal Coopetition Intensity acts as a driver for Organizational Learning. With this research, value is also added to the organizational learning literature. I propose new ways firms can induce learning within the company, when the internal tensions are taken care of accordingly.

The overall research question of this study is “Can internal coopetition enhance organizational learning, if so, how?” After collecting and examining the results it can be said that Internal Coopetition enhances Organizational Learning. I explain it by the two opposing drivers of knowledge, competition and cooperation, which happen simultaneously. With two knowledge drivers, more learning will be generated, though it has to be understood that more research has to be done to unearth the effects internal tensions and internal coopetition capabilities can have on organizational learning.

6.2 Managerial advice
One important aspect of these findings and conclusions is how managers can apply these results for improved results. In this part I make suggestions that will benefit managers in terms of coopetition and organizational learning. It should be noted that change made on the business, department, or even on team level by managers, based upon this findings, do not guarantee positive outcome. The nature of this research is explorative and thus mainly aimed to benefit academics interested in the research on coopetition, especially internally.

However, managers are very welcome to get a better understanding of coopetition since it plays a rather underappreciated, yet important role in today’s business environment. Organizational learning is not parallel to department learning. Ensure the data produced or obtained by your department are accessible for other departments without giving up your value. To remain valuable in the company and obtain an enriching system positioning, managers are urged to encourage competitiveness. Competitiveness is not necessarily an evil method when adopted carefully. As profoundly discussed throughout this research, aiming to adopt both competition and cooperation between departments can cause internal tensions.

One of the most useful findings for managers is that internal tensions cause organizational learning by coopetition to drop. In the literature, particularly in the theoretical framework, measures against internal tensions are suggested.
These so-called coopetition capabilities should help managers to balance coopetition and decreasing the internal tensions. The coopetition capabilities have proven to be insignificant. This shows that managers should actively be looking for ways to decrease the internal tensions that are effective for their teams. The ability to understand how to balance changing relationships and the ability to manage contradicting demands are proven to be ineffective in relationship to internal tensions. The manager’s ambidexterity is thus not working for internally caused tensions. A trial and error method on how to balance coopetition without comprising any potential benefits would be a proficient start on finding your team or your department’s needs and weaknesses. Through this mapping the ideal ways to foster a coopetitive environment in the company, with your department on the forefront, will be identified.

6.3 Limitations

The limitations of this research are described in this last part. One important remark I’d like to make is it should be noted that this research was of explorative nature and thus its results should be used with caution.

Firstly, The sample size was relatively small. The decision to use a mere 61 respondents had to do with the accessibility to respondents within the firm and the narrow timeframe. For that reason, it is impossible to generalize the results across the high-technology industry, let alone other industries. Though, the model and the data analysis with this small sample size should be a good indicator for future studies.

Secondly, one limitation of this research is that the term ‘department’ has been used to describe the actual department, (virtual) teams, task forces, and other forms of partnerships. Yet, companies have different structures and thus results might not be useful for all firms. For example, Unilever has a multi-unit structure where a set of units competes externally also in the FMCG market. Alternatively, Apple has one single product portfolio and all its departments are focused on achieving success for these products. This is obviously a different structure, which has not been accounted for in this research.

Thirdly, during this research I have not accounted for any differences between headquarters based employees and subsidiary based employees. None of the previous literature has shown any particular interest in HQ-based and subsidiary based employees and the relation between these two groups of employees. I do think there might be a difference in office culture when working ‘where the big boss works’ or when you are geographically more distant from the ‘big boss’. The sample size in my research was too narrow to analyze such differences through Chi-Squared tests thoroughly.

Fourthly, besides the differences in office cultures there might be a difference in region or national cultures. As Hofstede (1983) pointed out, differences in cultures can lead to alternative decision making processes and general business approaches. Again, the cultural dimension can and should be more thoroughly researched to have a more complete view on coopetition in the company. The company culture itself is not enough to completely wipe out any regional or national cultures and thus customized approaches should be integrated to support such cultures.
Fifthly and lastly, Bengtsson & Kock (2014, p. 182) define intra-coopetition as departments, (virtual) teams, taskforces, and similar groupings within a firm. However, teams within a department might have similar struggles as a department within a firm has respectively. Teams are generally smaller than departments and thus more agile with a quicker decision-making process.

It can be argued that a difference should be made between teams within the departments and departments as a whole. In this research, teams within a department and the department itself have been grouped under the label ‘department’. Future research might propose and research differences between these groupings within the firm.

Most of the limitations discussed in this research are due to the breath of the sample size. It is strongly suggested that future researches, especially in the young academic field of intra-organizational coopetition work with and analyze a bigger sample size. With a bigger and more carefully selected sample size will prove to show a more comprehensive picture of how coopetition works in the company. Furthermore, the sample size should also be more thoroughly checked for normal distribution across offices and geographical distances. By doing so, the third and the fourth limitation of this research will be eliminated. To be able to conclude on business culture or national/regional cultures in terms of coopetition behavior would be a worthy attempt to understand intra-organizational coopetition better.
References


Dervin, B. (1992). From the mind's eye of the user: the sense-making qualitative-quantitative methodology. Qualitative research in information management, 9, 61-84.


Strategic management journal, 21(10-11), 1105-1121.


Tjosvold, D., & Wong, C. (1994). Working with customers: Cooperation and


## APPENDICES

### Appendix 1: Measured items

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Measurements Items</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cooperation</strong></td>
<td><em>To what extent (1-not at all / 5-very high extent)</em>&lt;br&gt;- Departments here share communications frequently in our business&lt;br&gt;- We expect that our strong interdepartmental social relationship will exist far into the future&lt;br&gt;- All departments frequently discuss common problems in our business&lt;br&gt;- Our relationship with other departments is mutually gratifying and highly cohesive</td>
</tr>
<tr>
<td><strong>Competition</strong></td>
<td><em>To what extent (1-not at all / 5-very high extent)</em>&lt;br&gt;- The departments battle to seize maximum share of the value that has been developed together&lt;br&gt;- Departments try to protect important knowledge to maintain own advantage relatively to other departments&lt;br&gt;- Our department rapidly responds to initiatives from other departments that can give them an advantages over us&lt;br&gt;- Departments try to increase their own benefits at the expense of other departments</td>
</tr>
<tr>
<td><strong>Internal Tensions</strong></td>
<td><em>To what extent (1-not at all / 5-very high extent)</em>&lt;br&gt;- To share knowledge, but at the same time, protect the self interest of my own department&lt;br&gt;- To create mutual benefits, but at the same time, exploit private benefits at the expense of the other&lt;br&gt;- To reciprocate, but at the same time, take competitive actions against each other&lt;br&gt;- To cooperate in some activities, but at the same time, compete in others&lt;br&gt;- To create value together, but at the same time, fight to seize the maximum share of this value&lt;br&gt;- To keep a close relationship with each other, but at the same time, not getting too close&lt;br&gt;- Dissimilarities between our strategic goals and interests&lt;br&gt;- Dissimilarities between our time orientations (short-term versus long-term orientation)</td>
</tr>
<tr>
<td><strong>Coopetition Capability</strong></td>
<td><em>To what extent (1-not at all / 5-very high extent)</em></td>
</tr>
</tbody>
</table>
- We filter information before sharing it with other departments so that strategically important information is protected
- We have the capability to contribute to the knowledge of the other department without risking our own core competence
- We have a good understanding about which areas are suitable to cooperate and to compete in
- We have a good understanding on which factors cause instability in the coopetition relationship
- We act proactively to balance cooperation and competition flexibility characterizes our way to handle the relationships
- Contradicting demands do not hinder us to obtain our goals
- We can manage the contradicting demands without jeopardizing the overall purpose of the relationship
- We are able to capitalize on the opportunities and to manage the risks related to simultaneous cooperation and competition
- We have the capability to continuously change the content of the relationship

**Organizational learning** *To what extent (1-not at all / 5-very high extent)*
- We have the capability to learn from our 'coopetition' partner
- We have the managerial competence to absorb new knowledge from our 'coopetition' partner
- We have adequate routines to analyze the information obtained from our coopetition partner
- We can successfully integrate our existing knowledge with new information acquired from our 'coopetition' partner
- [Reverse] The relationship has contributed to the loss of important knowledge
- To increase knowledge available in the department
<table>
<thead>
<tr>
<th>Year</th>
<th>Pearson Correlation</th>
<th>Sig. (2-tailed)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>61</td>
</tr>
<tr>
<td>19</td>
<td>0.241</td>
<td>0.061</td>
<td>61</td>
</tr>
<tr>
<td>484</td>
<td></td>
<td></td>
<td>61</td>
</tr>
<tr>
<td>16</td>
<td>0.366</td>
<td>0.004</td>
<td>61</td>
</tr>
<tr>
<td>999</td>
<td></td>
<td></td>
<td>61</td>
</tr>
<tr>
<td>1</td>
<td>0.028</td>
<td>0.828</td>
<td>61</td>
</tr>
<tr>
<td>16</td>
<td>0.324</td>
<td>0.011</td>
<td>61</td>
</tr>
<tr>
<td>324</td>
<td></td>
<td></td>
<td>61</td>
</tr>
<tr>
<td>1</td>
<td>0.064</td>
<td>0.623</td>
<td>61</td>
</tr>
<tr>
<td>16</td>
<td></td>
<td></td>
<td>61</td>
</tr>
<tr>
<td>19</td>
<td>0.851</td>
<td>0.000</td>
<td>61</td>
</tr>
<tr>
<td>482</td>
<td></td>
<td></td>
<td>61</td>
</tr>
<tr>
<td>178</td>
<td>0.524</td>
<td>0.000</td>
<td>61</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>61</td>
</tr>
<tr>
<td>16</td>
<td>0.100</td>
<td>0.804</td>
<td>61</td>
</tr>
<tr>
<td>241</td>
<td></td>
<td></td>
<td>61</td>
</tr>
<tr>
<td>1</td>
<td>0.352</td>
<td>0.003</td>
<td>61</td>
</tr>
<tr>
<td>16</td>
<td>0.315</td>
<td>0.000</td>
<td>61</td>
</tr>
<tr>
<td>179</td>
<td>1.000</td>
<td>0.000</td>
<td>61</td>
</tr>
<tr>
<td>16</td>
<td>0.091</td>
<td>0.462</td>
<td>61</td>
</tr>
<tr>
<td>623</td>
<td></td>
<td></td>
<td>61</td>
</tr>
<tr>
<td>1</td>
<td>0.091</td>
<td>0.462</td>
<td>61</td>
</tr>
<tr>
<td>16</td>
<td>0.339</td>
<td>0.007</td>
<td>61</td>
</tr>
<tr>
<td>336</td>
<td></td>
<td></td>
<td>61</td>
</tr>
<tr>
<td>1</td>
<td>0.369</td>
<td>0.003</td>
<td>61</td>
</tr>
<tr>
<td>16</td>
<td>0.339</td>
<td>0.007</td>
<td>61</td>
</tr>
<tr>
<td>336</td>
<td></td>
<td></td>
<td>61</td>
</tr>
</tbody>
</table>

Notes:
- Correlation is significant at the 0.01 level (2-tailed).
- Correlation is significant at the 0.05 level (2-tailed).
### Appendix 3: Simple Linear Regression Model Summary + ANOVA

#### Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.524&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.274</td>
<td>.262</td>
<td>.6039</td>
</tr>
</tbody>
</table>

*a. Predictors: (Constant), Coopetition Intensity*

#### ANOVA<sup>a</sup>

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>8.130</td>
<td>1</td>
<td>8.130</td>
<td>22.297</td>
<td>.000&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Residual</td>
<td>21.514</td>
<td>59</td>
<td>.365</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>29.644</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*a. Dependent Variable: Internal Tensions

b. Predictors: (Constant), Coopetition Intensity*
Appendix 4: Second Simple Linear Regression Model Summary + ANOVA

### Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.369$^a$</td>
<td>.136</td>
<td>.121</td>
<td>.3807</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Coopetition Intensity

### ANOVA$^a$

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>1</td>
<td>1.347</td>
<td>9.291</td>
<td>.003$^b$</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>59</td>
<td>.145</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>60</td>
<td>9.897</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Organizational Learning

b. Predictors: (Constant), Coopetition Intensity
### Appendix 5: Multiple Regression Analysis Model Summary + ANOVA

#### Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.407&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.166</td>
<td>.137</td>
<td>.3774</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Internal Tensions, Coopetition Intensity

#### ANOVA<sup>a</sup>

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>1.638</td>
<td>2</td>
<td>.819</td>
<td>5.752</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>8.259</td>
<td>58</td>
<td>.142</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>9.897</td>
<td>60</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Organizational Learning
b. Predictors: (Constant), Internal Tensions, Coopetition Intensity
Appendix 6: Scatter Plots for Descriptive Results

6.1 Coopetition Intensity
6.2 Internal Tensions
Appendix 7: Histograms

Histogram 1: Copetition Intensity
- Mean = 3.24
- Std. Dev. = .411
- N = 61

Histogram 2: Internal Tensions
- Mean = 3.38
- Std. Dev. = .703
- N = 61