

Johanna Gast

THE COOPETITION - INNOVATION NEXUS: INVESTIGATING THE ROLE OF COOPETITION FOR INNOVATION IN SMES

Thesis for the degree of Doctor of Science (Economics and Business Administration) to be presented with due permission for public examination and criticism in the Auditorium of the Student Union House at Lappeenranta University of Technology, Lappeenranta, Finland on the 8th of June, 2017, at noon.

Acta Universitatis
Lappeenrantaensis 746

- Supervisor Professor Dr. Dr. Sascha Kraus
Institute for Entrepreneurship
University of Liechtenstein
Liechtenstein
- Professor Dr. Paavo Ritala
LUT School of Business and Management
Lappeenranta University of Technology
Finland
- Associate Professor Dr. Katherine Gundolf
Department of Entrepreneurship and Strategy
Montpellier Business School
France
- Reviewers Professor Dr. Wojciech Czakon
Faculty of Management
University of Economics Katowice
Poland
- Associate Professor Dr. Rainer Harms
Department of Business Administration
University of Twente
The Netherlands
- Opponent Associate Professor Dr. Teemu Kautonen
Department of Management Studies
Aalto University
Finland

ISBN 978-952-335-084-7
ISBN 978-952-335-085-4 (PDF)
ISSN-L 1456-4491
ISSN 1456-4491

Lappeenrannan teknillinen yliopisto
Yliopistopaino 2017

Abstract

Johanna Gast

The Coopetition - Innovation Nexus: Investigating the Role of Coopetition for Innovation in SMEs

Lappeenranta 2017

96 pages

Acta Universitatis Lappeenrantaensis 746

Diss. Lappeenranta University of Technology

ISBN 978-952-335-084-7, ISBN 978-952-335-085-4 (PDF), ISSN-L 1456-4491, ISSN 1456-4491

Coopetition, i.e. cooperation among competitors such as Daimler and BMW who recently decided to merge their car sharing services, has become more than a buzz-word and has inspired practitioners and scholars to increasingly draw attention to the existence of relationships that include cooperative and competitive ties simultaneously.

The finding that collaboration with rivals can be beneficial for innovation represents a valuable insight, because innovation is a major strategy to ensure firms' long-term survival. The role of coopetition for innovation may be particularly pronounced when firms face scarcities in resources and knowledge, which may inhibit their innovation capability. Typically, SMEs are confronted with such limitations, however, only some studies have explored coopetition in this context so far. Instead, most coopetition research has focused on large firms. By enabling important sharing mechanisms through which resources and knowledge can be mutually accessed, developed, and integrated into the coopeting firms, coopetition may symbolise an escape route for SMEs.

Given the lack of research and the potential importance of coopetition for innovation in resource-constrained settings, the objective of this thesis is to demystify how SMEs, including their typical sub-groups young SMEs and family SMEs, can boost innovation through coopetition. This thesis is composed of two parts. Part I sets out the background, literature, and conclusions of the thesis; Part II presents the six publications that apply different scientific methods to answer the research questions.

The study makes three main contributions. First, it illustrates the infancy stage of coopetition research as several open questions remain unanswered. Second, the insights advance the knowledge of how coopetition can facilitate innovation in SMEs that face shortages in resources and knowledge, including the two sub-groups of young SMEs and family SMEs. Third, the thesis shows how family SMEs' survival can be improved by coopetition along with the family members' socioemotional, non-economic objectives. Additionally, the empirical findings reveal not only possible benefits but also risks accompanying coopetition, which underlines the double-edged consequences of coopetition.

Keywords: coopetition, innovation, SMEs, young SMEs, family SMEs, socioemotional wealth

Acknowledgements

The completion of my doctoral thesis was a long, bumpy, and emotional ride which required a lot of discipline, motivation, perseverance, and willpower. This journey would have never been possible without the tremendous support of many people who stood by my side during the last three years. At this point, I would like to take a moment to thank those people who all deserved a big “Thank you!”

First of all, I would like to express my sincere gratitude to my supervisor *Professor Dr. Dr. Sascha Kraus*. Your continuous encouragement throughout my entire academic journey, including my bachelor, master, and doctoral studies, as well as your immense experience and trust supported me during this entire journey. Without your guidance, I would not even have thought about writing a doctoral thesis and I could not have imagined having a better advisor and mentor for my Ph.D. and academic career. Thank you!

Secondly, I would like to thank *Professor Dr. Paavo Ritala* for being my supervisor. As being an expert in cooperation, I learned a lot from you and your work. Furthermore, you were always extremely supportive during the entire dissertation process, not only solving administrative issues on-site at the Lappeenranta University of Technology (LUT) but also helping me organise the day of my public examination. Thank you!

A big “Thank you” also goes to *Associate Professor Dr. Katherine Gundolf*. You not only provided me with the opportunity to join your team at Montpellier Business School (MBS) but you also supervised my “daily thesis business”. You made me realise how important it is to have “many irons in the fire” and you supported me in all my efforts to build up my future career in France. You have always been a great help for both research-related as well as “survival” questions in France. Thank you!

I also express my sincere gratitude to my pre-examiners *Professor Dr. Wojciech Czakon* and *Associate Professor Dr. Rainer Harms*. Your helpful comments and remarks helped me a lot when putting the finishing touch to my manuscript.

Of course, I would also like to thank my opponent *Associate Professor Dr. Teemu Kautonen*. It is a great honour for me to have you as an opponent as you are an expert in the field of entrepreneurship, innovation, and family firms. Thank you very much for your time and effort!

I would like to continue by thanking all my *co-authors* with whom I had the honour of working with during the last years. Thank you for all your hard work and excellent contributions. You shared your knowledge and experiences with me, you provided me with regular feedback on our projects, and you were there for me whenever I had questions. I learned a lot from you, and our collaborations helped me in developing my research skills.

A very special “Thank you” goes to the staff of the *LUT School of Business*, the *LUT Doctoral School* and *MBS*. During the entire dissertation process, the staff of the *LUT School of Business* and the *LUT Doctoral School* helped me out continuously with respect to all questions on the administrative and academic matters. Further, I am thankful for the support of the entire *MBS*. All *MBS* staff always supported me during this journey and provided me with a 3-year Ph.D. scholarship, access to funding for research and conferences, as well as a helping hand when it comes to administrative matters. Thank you all!

Throughout this journey, I have felt also incredibly grateful for all the support I have received and continue to receive from the people who are dearest to me. In particular, my parents *Regina* and *Bernd*, my brother *Jonathan*, my grandparents *Margot* and *Ludwig*, my companion *Christophe*, and my closest friends *Katharina*, *Judith*, *Saskia*, *Lisa*, *Carola*, *Pauline*.

In the last couple of years, I was not able to attend all family events, to be present at all birthday parties, and to come and visit you all as regular as I would have liked in Germany, Austria, or Holland. Nevertheless, you stood always by my side, and you all understood that my Ph.D. journey included hours of writing (and rewriting!), thinking (and rethinking!) which I could not spend with you. Most importantly, you realised that sometimes all I needed was a big hug, a digital “skype-shoulder” to cry on, a weekly encouraging text message, or a motivating “Kölsch”. You were there for me when I most needed you during my many emotional ups and downs and pushed me forward even when I thought I could not stand it any longer. I was and still am lucky to have you all in my life, and this Ph.D. journey would not have been possible without your incredible support.

You are absolutely fantastic, thank you all!

Johanna Gast
May 2017
Montpellier, France

This work is dedicated to my family & friends!

Contents

Abstract

Acknowledgements

Contents

List of Publications 11

List of Tables 15

List of Figures 16

Nomenclature 17

1 Introduction 19

1.1 Research Background and Motivation 19

1.2 Research Gaps 23

1.3 Research Questions 25

1.4 Outline of the Thesis and Linkages between Publications and
Research Questions 27

1.5 Definition of Key Terms 29

2 Literature Review 31

2.1 Coopetition 31

2.2 Innovation..... 32

2.3 Coopetition - Innovation Nexus 34

2.3.1 Roles of coopetition for innovation 34

2.3.2 SMEs' innovation challenges and the roles of coopetition..... 37

2.3.3 Young SMEs' innovation challenges and the roles of
coopetition..... 39

2.3.4 Family SMEs' innovation challenges and the roles of
coopetition..... 41

2.4 Positioning of the Thesis 43

3 Methods 45

3.1 Research Design Strategy 45

3.2 Method Description, Data Collection, and Analysis 48

3.2.1 Systematic literature review 48

3.2.2 Meta-analysis 51

3.2.3 Bibliometric citation analysis..... 53

3.2.4 Case study research 54

3.3 Quality of the Research 56

4	Review of the Publications	59
4.1	Publication 1 - Coopetition: A Systematic Review, Synthesis, and Future Research Directions	59
4.2	Publication 2 - Lifting the Veil: Early Effects on Antecedents and Consequences of Coopetition from a Meta-Analysis.....	60
4.3	Publication 3 - Organisational Innovation and Coopetition between SMEs: A Tertius Strategies Approach	61
4.4	Publication 4 - David and Goliath: Causes and Effects of Coopetition between Start-ups and Corporates	62
4.5	Publication 5 - Innovation in Family Firms: Examining the Inventory and Mapping the Path.....	63
4.6	Publication 6 - Coopetition of Small- and Medium-Sized Family Enterprises: Insights from an IT Business Network.....	64
4.7	Overview of the Publications	66
5	Conclusion	69
5.1	Answering the Research Questions	69
5.2	Theoretical Implications.....	72
5.2.1	Contributions to coopetition literature	72
5.2.2	Contributions to family firm innovation literature.....	74
5.3	Managerial Implications.....	75
5.4	Limitations.....	76
5.5	Suggestions for Future Research.....	79
	References	81
	Publications	

List of Publications

This thesis is based on six academic articles. The following section including Table 1 present briefly the individual articles and the author's contribution to each of them. The rights have been granted by publishers to include the papers in the thesis.

PUBLICATION 1:

Bouncken, R., Gast, J., Kraus, S., and Bogers, M. (2015). Coopetition: A Systematic Review, Synthesis, and Future Research Directions. *Review of Managerial Science*, 9(3), 577-601.

The author was mainly responsible for idea finding, executing the systematic literature review, including the systematic compilation and coding of the sample of relevant literature, analysing and interpreting the findings in the light of existing research, writing extensive parts of the manuscript as well as taking responsibility for the required revisions during the single review rounds with the journal. The co-authors' major contributions included their far-reaching support in the execution of the systematic literature review and the analysis and interpretation of the findings, as well as their essential feedback during the writing of the manuscript and the peer-review process for the journal publication.

PUBLICATION 2:

Gast, J., Niemand, T., Kraus, S., Ritala, P., and Bouncken, R. (2017). Lifting the Veil: Early Effects on Antecedents and Consequence of Coopetition from a Meta-analysis. *Global Research Symposium on Marketing and Entrepreneurship (GRSME)*, Babson College, San Francisco/USA, 04-06 August, 2017.

The author was mainly responsible for idea finding, executing the systematic literature search which served as basis for the analysis, including the systematic compilation, categorization and coding of the sample of relevant articles, analysing and interpreting the findings in the light of existing research, writing most of the manuscript, as well as taking responsibility for the conference submission. The co-authors' major contributions included their support during the categorization and coding of the sample articles in line with the multiple assessor method and the execution of the meta-analysis calculations.

PUBLICATION 3:

Granata, J., Géraudel, M., Gundolf, K., Gast, J., and Marques, P. (2016). Organizational Innovation and Coopetition between SMEs: A Tertius Strategies Approach. *International Journal of Technology Management*, 70(1/2), 81-99.

The author was mainly responsible for writing major parts of the manuscript, extending the literature base, as well as taking responsibility for the required revisions during the single review rounds with the journal. The co-authors' major contributions included their far-reaching efforts with respect to idea finding, data collection, analysis, and interpretation.

PUBLICATION 4:

Hora, W., Gast, J., Kailer, N., and Mas-Tur, A. (2017). David and Goliath: Causes and Effects of Coopetition between Start-ups and Corporates. *Review of Managerial Science*, accepted for publication with minor revisions.

The author was mainly responsible for writing an extensive part of the manuscript, extending the literature base, as well as taking responsibility for the required revisions during the single review rounds with the journal. The co-authors' major contributions included their far-reaching efforts with respect to idea finding data collection, analysis, and interpretation.

PUBLICATION 5:

Filser, M., Brem, A., Gast, J., Kraus, S., and Calabro, A. (2016). Innovation in Family Firms: Examining the Inventory and Mapping the Path. *International Journal of Innovation Management*, 20(6), pp. 1650054-1650093.

The author was mainly responsible for executing the systematic literature review, including the systematic compilation and coding of the sample of relevant literature, analysing and interpreting the findings in the light of existing research, writing an extensive part of the manuscript as well as taking responsibility for the required revisions during the individual review rounds with the journal. The co-authors' major contributions included their far-reaching support with respect to idea finding, the execution of the systematic literature review and the analysis and interpretation of the findings, as well as their essential feedback during the writing of the manuscript and the peer-review process for the journal publication.

PUBLICATION 6:

Gast, J., Kallmünzer, A., Kraus, S., Gundolf, K., Arnold, J. (2017). Coopetition of Small- and Medium-Sized Family Enterprises: Insights from an IT Business Network. *International Journal of Entrepreneurship and Small Business*, in press.

The author was mainly responsible for idea finding, analysing and interpreting the findings in the light of existing research, writing most of the manuscript, as well as taking responsibility for the required revisions during the single review rounds with the journal. Furthermore, the author supported the development of the interview guideline and provided help with respect to the in-depth interviews. The co-authors' major contributions included their far-reaching efforts with respect to data collection, analysis, and interpretation and their essential cooperation and feedback during the writing of the manuscript and the peer-review process for the journal publication.

Table 1. Overview of the thesis in terms of publications

Publications		
Publication 1 Coopetition: A Systematic Review, Synthesis, and Future Research Directions	Journal Status VHB Finnish Publication Forum	Review of Managerial Science Published (2015) B 1
Publication 2 Lifting the Veil: Early Effects on Antecedents and Consequence of Coopetition from a Meta-analysis	Conference	Global Research Symposium on Marketing and Entrepreneurship (GRSME) 2017
Publication 3 Organisational Innovation and Coopetition between SMEs: A Tertius Strategies Approach	Journal Status VHB Finnish Publication Forum	International Journal of Technology Management Published (2016) C 1
Publication 4 David and Goliath: Causes and Effects of Coopetition between Start-ups and Corporates	Journal Status VHB Finnish Publication Forum	Review of Managerial Science Accepted for publication (2017) B 1
Publication 5 Innovation in Family Firms: Examining the Inventory and Mapping the Path	Journal Status VHB Finnish Publication Forum	International Journal of Innovation Management Published (2016) B 1
Publication 6 Coopetition of Small- and Medium-Sized Family Enterprises: Insights from an IT Business Network	Journal Status VHB Finnish Publication Forum	International Journal of Entrepreneurship and Small Business In press (2017) C 1

List of Tables

- Table 1.** Overview of the thesis in terms of publications
- Table 2.** Overview of the thesis in terms of research questions and sub-questions
- Table 3.** Overview of the thesis in terms of research methods
- Table 4.** Conversion table of leading academic journal rankings
- Table 5.** Overview of the identified coepetition effects in Publication 2
- Table 6.** Overview of propositions of Publication 3
- Table 7.** Overview of propositions of Publication 4
- Table 8.** Overview of propositions of Publication 6
- Table 9.** Summary of the publications and their main contributions to the thesis

List of Figures

- Figure 1. Positioning of the individual publications
- Figure 2. Systematic research approach Publication 1
- Figure 3. Systematic research approach Publication 5
- Figure 4. Systematic research approach Publication 2

Nomenclature

Abbreviations

CEO	Chief executive officer
DCV	Dynamic capabilities view
EU	European Union
IT	Information technology
LCD	Liquid crystal display
MNE	Multinational enterprise
RBV	Resource-based view
R&D	Research and Development
SEW	Socioemotional wealth
SME	Small- and medium-sized enterprise
TV	Television

1 Introduction

1.1 Research Background and Motivation

“The best partner for a firm in a strategic alliance is sometimes one of its strong competitors.”
(Gnyawali & Park, 2009, p. 312)

Recently, big corporations such as Daimler and BMW or Samsung Electronics and Sony Corporation while still being fierce competitors have decided to join forces with the particular goal to increase their innovativeness and competitiveness. As recently as in December 2016, Daimler and BMW have begun to merge their car sharing services. Although Daimler and BMW cooperate to improve their ability to fight together against their largest rivals by means of cost sharing and cost savings (Bay, 2016), it is yet too early to analyse the two firms' accrued benefits in terms of their ability to innovate and compete.

For the example of Samsung and Sony, however, significant implications for the firms' innovativeness and competitiveness as a result of cooperation have been reported. In 2004 already, the two technology giants have become critical competitors when they started to cooperate to advance the development and production of flat-screen liquid crystal display (LCD) television (TV) panels and initiated a joint venture called “S-LCD” (Gnyawali & Park, 2011; Ritala & Hurmelinna-Laukkanen, 2009). Both firms contributed not only significant financial resources, US\$1 billion/firm, but also complementary technological resources and capabilities (Ritala & Hurmelinna-Laukkanen, 2009) such as brand recognition and technological strengths in the LCD (Samsung) or TV technology (Sony) (Gnyawali & Park, 2011). As a consequence of cooperation, Samsung and Sony each realised key benefits in terms of their innovativeness and competitiveness. First, cooperation facilitated the firms' mutual development of new, innovative LCD technologies through the combined technological know-how and development efforts. Thanks to the development and implementation of these technologies, Samsung became the market leader in the large size LCD panel market segment. Sony, experiencing major problems in developing flat screen TV sets before cooperating with Samsung, improved its innovativeness and was able to catch-up with competitors (Gnyawali & Park, 2011). Second, Samsung and Sony increased their individual market shares from 10% and 11% in 2004 to 23% and 18% in 2008 respectively. While they were ranked as 3rd and 4th market players before cooperating, they have become the 1st and 2nd player in the total TV market as well as the LCD TV segment respectively (Gnyawali & Park, 2011).

These real-life examples demonstrate that inter-firm partnerships among competitors are gaining momentum (Bengtsson & Kock, 2000) as a result of the presently unstable, constantly changing, and challenging business environments (Renna & Argoneto, 2012). In such contexts, firms are required to take on a proactive, flexible, and open mindset towards external cooperation if they want to succeed in their activities.

Cooperative relationships among competitors characterised by simultaneous cooperative and competitive ties are formally defined as *coopetition*, a combination of the words *cooperation* and *competition* (Brandenburger & Nalebuff, 1996). Although it is commonly agreed that the breakthrough publication of Brandenburger and Nalebuff in 1996 has led to an increased attention paid to coopetition (Gnyawali & Song, 2016; Bengtsson & Kock, 2014), mostly in the fields of management and business, the strategy to cooperate with rivals has a long history.

One of the first reported examples concerns Kirk S. Pickett who is said to have used the term already in 1911 when discussing the relationships among 35,000 oyster dealers. According to Cherington (1913), Pickett pointed out that the dealers were not merely competing but cooperating with one another seeking to create a bigger market for all dealers. Accordingly, Pickett noted that they were in coopetition. As such, coopetition is not a new phenomenon but the term has more frequently been applied since the late 1990s' to refer to cooperation among competitors as a complementary concept to overcome the gap between the conventional approaches of competition and cooperation (Roy & Yami, 2009). Coopetition thus addresses the existence of inter-firm relationships that focus on both convergent and divergent interests simultaneously.

Innovation, i.e. the creation of novel or advanced products, services, processes etc. (Van de Ven, 1986), and innovativeness, i.e. a firm's ability to innovate (Hult et al., 2004, Salavou, 2004), are key ingredients for firms' economic performance, growth, and survival (Cooper, 2000). As such, innovation is said to "renew companies, enhance their competitive advantage, spur growth, create new employment opportunities and generate wealth" (Hayton & Kelley, 2006, p. 407) and innovativeness allows firms to develop competitive advantages based on innovative product, services, processes etc. (Rhee et al., 2010; Salavou, 2004; Cooper, 2000). Given the importance of innovation and innovativeness, extant research has studied the question of what drives the firms' innovation ability primarily building on the resource-based view (RBV) and the dynamic capabilities view (DCV). By pointing out the importance of resources based on the RBV as well as skills and capabilities based on the DCV, research has suggested several antecedents of innovativeness, including firms' financial resources and their abilities and readiness to assume risks, to act proactively, to respond to customer preferences (e.g., Covin et al., 2016; Pesämaa et al., 2013). Moreover, firms' entrepreneurial, managerial, and technological capabilities (e.g., Kyrgidou & Spyropoulou, 2013), or market and entrepreneurial orientations have been found to explain firm innovativeness (e.g., Pesämaa et al., 2013; Harms et al., 2010; Tajeddini, 2010; Hult et al., 2004).

An additional key antecedent is external knowledge as it facilitates innovation development and implementation (Pittaway & Rose, 2006) and plays a major role in determining firms' innovativeness (Parra-Requena et al., 2015). External knowledge can be accessed through different forms of relationships with external partners including suppliers, customers, or competitors (Covin et al., 2016; Enberg, 2012). Especially cooperation with competitors seems to play a significant role in advancing firms' technological progress and innovation capability (Gnyawali & Park, 2011). Facing

increased uncertainty, firms have to apply more flexible and dynamic forms of collaboration, including cooperation with their rivals, to speed up innovation and enhance competitiveness (Bengtsson & Kock, 1999).

So far, research has produced numerous evidence on the positive relationship between cooptition and innovation (Bouncken et al., 2016; Estrada et al., 2016; Ribeiro-Soriano et al., 2016; Ejsmont, 2014; Ritala & Hurmelinna-Laukkanen, 2013) and has sought to examine the effects, benefits, and risks of cooptition on innovation (Ritala & Sainio, 2014; Park et al., 2014; Bouncken & Kraus, 2013). In sum, research has argued that cooptition can improve the cooptitors' ability to compete in the global marketplace through keeping up with fast environmental changes, handling more efficiently the risks associated with the current unstable and uncertain future, and exchanging complementary resources, capabilities, and knowledge (Bouncken & Kraus, 2013). These exchange mechanisms among cooptitors are crucial for innovation and the firms' ability to innovate, which are both major sources of competitive advantage in today's turbulent, hostile, uncertain, and complex environments. Yet, innovation is challenging, especially for firms dealing with constraints in their stock of resources and knowledge (Morris et al., 2007).

Often, *small- and medium-sized enterprises* (SMEs), those firms employing less than 250 employees (European Commission, 2005), face limitations due to their liability of smallness (Akdoğan & Cingöz, 2012; Morris et al., 2007), which can inhibit their innovation performance (Camison-Zornoza et al., 2004). Through the formation of partnerships with external partners, such as suppliers, customers or even competitors, constrained firms can acquire missing innovation ingredients (Teece, 1992). Focusing on the potential advantages of cooperation among competitors, cooptition can serve as an escape or a survival route for a firm that is confronted with resource and knowledge shortages but wants and needs to engage in the development of innovations.

In fact, Gnyawali & Park (2009, p. 312) have postulated that "the best partner for a firm in a strategic alliance is sometimes one of its strong competitors" since a competitor generally shares the same contexts, threats, and opportunities and possesses complementary resources that are relevant to the other party (Gnyawali & Park, 2009). Through cooptition, financial, social, human, technological, marketing, or other managerial resources can be accessed (Quintana-Garcia & Benavides-Velasco, 2004), knowledge can be exchanged and integrated (Enberg, 2012) and risks and costs can be shared (Gnyawali & Park, 2009). Cooptitors can therefore be key sources of resources and knowledge, which can accelerate innovation.

Although cooptition research has been growing steadily (Bengtsson & Kock, 2014) and studies have frequently examined the importance of cooptition for innovation (Ritala et al., 2016), research on cooptition and its link with innovation is still young and several questions remain to be explored (Bengtsson & Kock, 2014). For example, existing cooptition research is limited to the exploration of a few firm types.

Coopetition research has emphasised that cooperative ties between competitors are primarily relevant for multinational enterprises (MNEs) and their innovation (e.g., Dahl, 2014; Gnyawali & Park, 2009) due to these firms' size, complexity, and scope (Tidström, 2008). In contrast, there is still a paucity of research investigating coopetition and its interplay with innovation in SMEs (Gnyawali & Song, 2016; Soppe et al., 2014; Thomason et al., 2013), including the common sub-groups of *young SMEs*, i.e. start-ups or new businesses¹ (Kraus & Kauranen, 2009; Kraus, 2007) that hire at least one paid employee and are neither subsidiaries nor branches of existing independent firms (Luger & Koo, 2005, p. 19), as well as *small-and medium-sized family-owned enterprises* (family SMEs), i.e. firms in which more than 50% of the voting shares belong to one family (Donckels & Fröhlich, 1991) and less than 250 employees are hired (European Commission, 2005). This lack of study is surprising for several reasons.

First, in the European Union (EU), as recently as 2015, SMEs accounted for 99.8% of all companies, gained 57.4% of value added, and represented 66.8% of total employment (Muller et al., 2016). Further, SMEs, including the sub-groups of young SMEs and family SMEs, are important creators of employment, economic growth, and innovation (Kollmann et al., 2016). Therefore scholars, entrepreneurs, managers, and politicians seek to understand the factors that may facilitate SMEs' growth and survival potential.

Second, although SMEs are known as major source of innovation, innovation is particularly difficult for these firms, including young SMEs and family SMEs. Accordingly, they represent sensitive firm types (Kossyva et al., 2014). This sensitivity is due to resource and knowledge shortages that may impede their innovation capability and possibly motivate them to coopete. In young SMEs and family SMEs, however, this restriction in resources and knowledge is coupled with additional characteristics that have to be taken into consideration when exploring these firms' business behaviour, such as their decision to engage in coopetition. In addition to the liability of smallness, young SMEs have to deal with a certain liability of newness (Stinchcombe, 1965) given their lacking track records and reputation effects. Stemming from family ownership and control (Chrisman et al., 2012), family SMEs exhibit different behavioural patterns compared to their non-family counterparts (Chrisman et al., 2016), which may determine their resources, capabilities, and strategies.

Third, not only large firms but also small, young and emerging, and family-owned firms engage in inter-firm/-competitor agreements (De Massis et al., 2015; Soppe et al., 2014; Courrent & Gundolf, 2009; Morris et al., 2007; Dowling et al., 1998). In this vein, scholars have already noted that "the importance of co-opetition seems to be even greater in the context of small and medium-sized enterprises" (Gnyawali & Park, 2009, p. 309) and examples can be found for SMEs, including young SMEs and family SMEs.

¹ In the literature, the terms young SMEs, start-ups and new businesses/business ventures are oftentimes used interchangeably, since start-ups are typically small and young organisations in the beginning (Kraus & Kauranen, 2009). In this line, this thesis refers to young SMEs as small and young, new ventures.

For example, in the Austrian ski industry, ski lift companies frequently form strategic collaborations with each other. These SMEs install lift-links between their formerly disconnected areas to expand the existing ski systems and to increase their capability to compete with larger skiing areas in France and Italy (Falk, 2017). An example of co-competition of young SMEs can be observed in the banking industry, where financial technology start-ups typically partner with established banks. These co-competitive ties enable the start-ups to kick start their developed innovation and the larger rivals to gain access to innovative ideas and services (BNP Paribas, 2016). A case of co-competing family SMEs has been identified in the French wine industry. To survive the intense competition in their markets, very small cooperating, but competing, French family firms have adopted co-competition strategies in the form of wine cooperatives (Granata, 2013). Hence, it can be assumed that SMEs, including young SMEs and family SMEs, look for creative, innovative ways to enrich their insufficient resource bases and reduce their liabilities.

Therefore, the overarching objective of this thesis is to explore the role of co-competition as a mechanism to unlock and improve the innovation potential of SMEs, including the two sub-groups of young SMEs and family SMEs. As such, the thesis seeks to further develop the present knowledge on the role of co-competition for innovation by taking into account the potential impact of contextual contingencies. This thesis thus represents a reaction to several recent calls for research to examine co-competition on different levels and in different contexts (e.g., Bengtsson & Kock, 2014).

1.2 Research Gaps

Given the demonstrated shortages in resources and knowledge faced by SMEs, including young SMEs and family SMEs, it can be assumed that co-competition can be of great significance for innovation in such contexts. However, existing research has failed to address co-competition and its role for innovation in these settings. This paucity of research represents a knowledge gap, which is addressed by means of the individual publications included in this thesis. In doing so, the conclusions provide directions for firm owners and managers to sustain and improve innovation through co-competition. With this in mind, the research presented in this thesis addresses the following research gaps.

The first void in the literature addressed in this thesis concerns the need of a systematic synthesis of previously published conceptual and empirical insights on co-competition to lay out the present understanding of co-competition for the subsequent empirical elaboration of the effects of co-competition on innovation. Co-competition as a phenomenon in strategy and management has been recognised since the late 1980s/early 1990s (Hamel, 1991; Von Hippel, 1987). Since then, a steadily increasing number of studies have elaborated on co-competition and the related implications. Given this development, a handful of systematic literature reviews has recently emerged (e.g., Bengtsson & Raza-Ullah, 2016; Dorn et al., 2016; Bengtsson & Kock, 2014; Czakon et al., 2014) to set the stage for the advancement of the research field. However, none of them has particularly focused on co-competition as a strategy for, e.g., innovation processes and the difficult management of co-competition due

to its associated benefits and risks. Therefore, research is needed that reviews systematically how coopetition can be applied as a strategy in different contexts and outlines the management of coopetition together with its potential advantages and disadvantages (Publication 1). Further, already established relationships in coopetition literature need to be tested and validated (Publication 2).

Second, there is a need to broaden research on the linkage between coopetition and innovation in SMEs. Although coopetition has sparked lively discussions as being a source of technological progress and innovation (Gnyawali & Park, 2011; Sammarra & Biggiro, 2008), existing research has mainly focused on large MNEs (Dahl, 2014; Gnyawali & Park, 2009). Only a small number of studies have explicitly analysed the potential contribution of coopetition for innovation in SMEs (Gnyawali & Song, 2016; Ricciardi et al., 2016; Thomason et al., 2013; Quintana-Garcia & Benavides-Velasco, 2004). On the one hand, SMEs may be pushed into coopetition (Granata et al., 2016; Thomason et al., 2013; Quintana-Garcia & Benavides-Velasco, 2004) due to their liability of smallness that manifests as a deficit in size, human, financial, or social resources, or capabilities (Akdoğan & Cingöz, 2012; Morris et al., 2007). Coopetition enables joint resource and risk sharing, as well as mutual development (Bengtsson & Kock, 2000) and can enhance innovation power (Gnyawali & Park, 2009). Further, coopetition has been found to be positively associated with enhanced financial performance (Levy et al., 2003) and lower overall uncertainty and costs for SMEs (Morris et al., 2007). On the other hand, however, research is needed to advance the knowledge on whether and how SMEs develop innovative coopetition relationships with each other to increase their survival potential when they are facing a situation of environmental uncertainty (Publication 3).

Young SMEs represent a typical form of SMEs in which coopetition in general and its impact on innovation is not yet explored sufficiently (Gast et al., 2015; Soppe et al., 2014). Given their small size and the additional characteristic of their young age, young SMEs typically encounter liabilities of both newness *and* smallness (Stinchcombe, 1965). As a result, they tend to lack a sufficient base of (financial, human and social) resources, capabilities, knowledge, as well as relationships and reputation (Freeman & Engel, 2007). Through coopetition, young SMEs can not only gain access to the missing capabilities and resources (Lechner et al., 2016; Quintana-Garcia & Benavides-Velasco, 2004) but, simultaneously, share risks and costs with a partner (Gnyawali & Park, 2009). Hence, it can be assumed that cooperation with larger, competing firms may represent a possibility for young SMEs to decrease their liabilities of newness and smallness (Lechner et al., 2016; Bouncken et al., 2015a). However, it is unknown whether, how, and why young SMEs engage in coopetition to decrease their described liabilities of smallness and newness through coopetition (Soppe et al., 2014; Adams et al., 2012). To better understand the potential coopetition drivers, benefits, and threats linked to their resource constraints, research is needed that analyses coopetition of young SMEs (Publication 4).

Finally, family-owned organisations have been almost entirely neglected in coopetition research (Gast et al., 2015). Being mostly SMEs (Voordeckers et al., 2007), family firms deal with similar challenges, including a scarcity in resources and knowledge that may

inhibit their innovation capability (De Massis et al., 2017) and drive them to adopt a cooperative mindset. However, these firms' strategic decision-making is determined by family involvement in ownership, management, and governance. This characteristic is the main distinguishing feature between family and non-family SMEs and has to be taken into account when studying cooperation and innovation of family-owned organizations.

Since the major decision-makers are, in many family cases, family members, their preferences and aspirations influence business goals and strategies (Classen et al., 2012). Family members' preferences and aspirations, however, are influenced by the aim to preserve both their economic and non-economic, socioemotional wealth (SEW) (Berrone et al., 2012). This effect of family members' preferences of economic and non-economic goals on firms' strategies may be even more pronounced in family SMEs, because family members enjoy greater levels of influence, authority and autonomy over strategic decisions due to the small size of the firm and its' ownership concentration (Chrisman et al., 2012). Prior research in family firm innovation has produced rather mixed conceptual and empirical insights (De Massis et al., 2013; Liang et al., 2013) and the question of whether or not and how family involvement in ownership and management influences firms' strategies like cooperation or innovation has sparked lively discussions.

To advance the understanding of family firm innovation, extant research efforts need to be identified and synthesised, and avenues for future research need to be developed (Publication 5). Next, the role of cooperation for innovation in family SMEs can be disentangled by taking into consideration the potential effect of family involvement in terms of economic and SEW goals on strategic decision-making (Publication 6).

1.3 Research Questions

Research remains unclear concerning the questions whether and how resource-constrained firms can improve their innovation capability through cooperation. Clarification is needed to enhance the understanding of the specificities of cooperation for innovation in SMEs. Accordingly, the core objective of this thesis is to address the previously identified research gaps and to investigate the linkages between cooperation and innovation in SMEs, including the sub-groups young SMEs and family SMEs, in a comprehensive and critical way by applying a multi-method approach. Thereby, this thesis seeks to answer the following main research question:

How can cooperation benefit innovation in SMEs?

This research question is the result of an extensive literature review on cooperation, which revealed that the application of cooperation in SMEs is still underexplored. Although cooperation is an important topic in management and business research, and has been found to be beneficial for innovation, research is lacking that attempts to further broaden the understanding of the relationship between cooperation and innovation. To develop a detailed answer to the main research question, the research presented in the six individual publications is guided by five sub-questions.

The first sub-question refers to the need to review and synthesise the current cooepetition literature. Although cooepetition research has been growing steadily, no clear picture of the literature base concerning the role of cooepetition as a strategy and the management of cooepetition as well as the antecedences or consequences of cooepetition has been provided so far. To close this void and to gain a detailed understanding of existing cooepetition research and future directions, the insights of a systematic literature review and a meta-analysis, i.e. a statistical synthesis, of contributions on cooepetition are presented in Publications 1 and 2. The underlying Sub-question 1 is formulated as follows:

Sub-question 1: *What is the current state-of-the-art research on cooepetition?
Where can research go from here?*

To broaden the understanding of cooepetition's role as an innovation driver, cooepetition is analysed in different types of SMEs. Therefore, the second sub-question calls for research on the cooepetition-innovation link in SMEs. In addressing this sub-question, a longitudinal case study of 45 French wineries is presented in Publication 3. Sub-question 2 is formulated as follows:

Sub-question 2: *What roles does cooepetition play for innovation in SMEs?*

Sub-question 3 refers to the need to develop knowledge on cooepetition in the previously understudied setting of young SMEs in which liabilities of size and age occur. This sub-question is addressed in Publication 4 which presents a multiple case study on cooepetition among 35 Austrian-based start-ups and 35 Austrian-based corporations. Accordingly, Sub-question 3 reads as follows:

Sub-question 3: *What roles does cooepetition play for innovation in young
SMEs?*

Family SMEs behave differently than their non-family counterparts, mainly due to family involvement in the firms' strategic decision-making. Given the existing but mixed findings on whether and how family involvement influences innovation, the current state-of-the-art research on family firm innovation needs to be synthesised. By combining a bibliometric citation analysis with a systematic literature review, Publication 5 analyses and organises the state-of-the-art research in this field, and develops compelling avenues for future research. As such, Publication 5 serves as a starting point for a more detailed empirical analysis of the roles of cooepetition for innovation in family SMEs (Publication 6). Thus, to present the current family firm innovation literature, Sub-question 4a reads as follows:

Sub-question 4a: *What is the current state-of-the-art research on innovation in
family firms?
Where can research go from here?*

The final sub-question addresses the interrelationship between coopetition and innovation in family SMEs. In Publication 6, the insights from a single case study of a German cooperating network of competing family SMEs operating in the innovation-intensive information technology (IT) industry are presented and discussed with respect to the concept of SEW. Thus, Sub-question 4b reads as follows:

Sub-question 4b: *What roles does coopetition play for innovation in family SMEs?*

1.4 Outline of the Thesis and Linkages between Publications and Research Questions

This work comprises two main parts: a thesis overview in Part I and six publications presented in Part II. Part I introduces the overall topic under investigation as follows:

- Chapter 1 summarises the research background and sets out the research questions as well as sub-questions.
- Chapter 2 provides the literature review of the thesis.
- Chapter 3 concentrates on the research design strategy and justifies the choice of the applied research methods.
- Chapter 4 reviews the individual publications, their background and objectives as well as results/contributions.
- Chapter 5 develops an answer to the main research question, synthesises the theoretical and managerial implications of the thesis, and reveals suggestions for future research.

Part II presents the publications. Each publication addresses a distinct sub-question to derive an answer to the main research question. Table 2 presents all of the included publications in terms of research questions and sub-questions per publication.

Table 2. Overview of the thesis in terms of research questions and sub-questions

Part I: Thesis overview	
Main research question <i>How can coopetition benefit innovation in SMEs?</i>	
Part II: Publications	
Introduction to coopetition	
Sub-question 1 <i>What is the current state-of-the-art research on coopetition? Where can research go from here?</i>	
Publication 1 Coopetition: A Systematic Review, Synthesis, and Future Research Directions	Publication 2 Lifting the Veil: Early Effects on Antecedents and Consequences of Coopetition from a Meta-analysis
Roles of coopetition for innovation in SMEs	
Sub-question 2 <i>What roles does coopetition play for innovation in SMEs?</i>	
Publication 3 Organisational Innovation and Coopetition between SMEs: A Tertius Strategies Approach	
Young SMEs	Family SMEs
Sub-question 3 <i>What roles does coopetition play for innovation in young SMEs?</i>	Sub-question 4a <i>What is the current state-of-the-art research on innovation in family firms? Where can research go from here?</i>
Publication 4 David and Goliath: Causes and Effects of Coopetition between Start-ups and Corporates	Publication 5 Innovation in Family Firms: Examining the Inventory and Mapping the Path
	Sub-question 4b <i>What roles does coopetition play for innovation in family SMEs?</i>
	Publication 6 Coopetition of Small- and Medium-Sized Family Enterprises: Insights from an IT Business Network

1.5 Definition of Key Terms

Absorptive capacity - refers to the extent to which a firm can acquire and utilize knowledge from outside sources (Cohen & Levinthal, 1990).

Capability - refers to “a firm’s capacity to deploy resources, usually in combination, using organisational processes, to effect a desired end. They are information-based, tangible or intangible processes that are firm-specific and are developed over time through complex interactions among the firm’s resources” (Amit & Schoemaker, 1993, p. 35).

Coopetition - refers to the “strategic and dynamic process in which economic actors jointly create value through cooperative interaction, while they simultaneously compete to capture part of that value” (Bouncken et al., 2015a).

Family firm - refers to a firm “... governed and/or managed with the intention to shape and pursue the vision of the business held by a dominant coalition controlled by members of the same family or a small number of families in a manner that is potentially sustainable across generations of the family or families” (Chua et al., 1999, p. 25).

Family SME - refers to a firm in which more than 50% of the voting shares belong to one family (Donckels & Fröhlich, 1991) and which employs less than 250 employees (see European Commission, 2005).

Incremental innovation - refers to small changes to existing products/services or technologies (Dewar & Dutton, 1986).

Innovation - refers to the set of activities which seek to explore and exploit business opportunities in order to generate, accept, and implement new ideas, processes, products, or services (Thompson, 1965).

Innovativeness - refers to “the firm’s capacity to engage in innovation; that is the introduction of new products, services or processes in the organisation” (Hult et al., 2004, p. 429).

Opportunism - refers to the behaviour of exploiting a weaker actor’s interests (Osarenkhoe, 2010).

Organisational innovation - refers to the change of a firm’s relationships with other firms or public institutions through, for example, alliances, partnerships, outsourcing or subcontracting (OECD, 2005).

Radical innovation - refers to the development of ground-breaking, radically new products/services/processes that require a high degree of new knowledge and/or technology and may result in disruptive market changes (Yang et al., 2014; Bouncken & Kraus, 2013).

Resource - refers to “firm-specific physical, human, and organisational assets” (Wernerfelt, 1984, p. 172).

SEW - refers to family firm owners’ “affective endowment” or non-economic gains which they derive from their ownership position in the firm and comprises five dimensions: (1) family influence, (2) family identification, (3) binding social ties, (4) emotional attachment, (5) renewal of family bonds (Gómez-Mejía et al., 2007).

SME - refers to a firm with less than 250 employees (see European Commission, 2005).

Start-up - refers to a “business entity which did not exist before during a given time period (new), which starts hiring at least one paid employee during the given time period (active), and which is neither a subsidiary nor a branch of an existing firm (independent)” (Luger & Koo, 2005, p. 19).

Tertius gaudens - refers to “the third who laughs/enjoys”, hence to an actor who can take advantage of opportunities generated by two other actors by means of his intermediation of position (Burt, 1992; Simmel, 1950) and who focusses on competition, conflict, and manipulation (Garriga, 2009).

Tertius iungens - refers to “the third who joins”, hence to an actor who is capable of linking disconnected actors (Obstfeld, 2005) focusses on cooperation and initiating cooperation (Garriga, 2009).

Young SME - refers to start-ups and new businesses/business ventures which are typically small and young organisations in the beginning (Kraus & Kauranen, 2009).

2 Literature Review

This chapter summarises prior knowledge in coopetition research. The presented insights serve as theoretical background for this thesis as well as for the individual publications.

2.1 Coopetition

Most scholars agree that Ray Noorda, chief executive officer (CEO) of Novell, an American multinational software and services company, coined the term “coopetition” in the 1980s when referring to the firm’s cooperative business relationships with rival licensees (Lechner et al., 2016). Nevertheless, the term remained more or less unnoticed until 1996. In 1996, scholars and managers started to recognize the strategy and coopetition attained popularity in theory and practice after Brandenburger and Nalebuff published their seminal book “*Co-opetition*”. In this book, the authors explicated the concept of cooperating with competitors by suggesting that managers should overcome traditional competitive thinking by establishing cooperative partnerships with their rivals to mutually create value.

When defining coopetition, several slightly different definitions can be found in existing research (Bengtsson et al., 2010), in particular, because researchers differ in their description of competitors. When taking on a broad view, competitors can be defined as actors who reduce the value of a focal firm’s products or services (Brandenburger & Nalebuff, 1996). For example, based on their value net framework, Brandenburger and Nalebuff (1996) describe coopetition as a cooperative-competitive relationship between suppliers, customers, complementors, or competitors. A somehow different, more narrow perspective is adopted when coopetition is defined as a competitive-cooperative relationship among *direct* competitors, which are firms operating in the same industry and offering the same product or service (Bengtsson & Kock, 2000).

Moreover, coopetition is described to be non-dichotomist (Padula & Dagnino, 2007) and both cooperation and competition must be visibly practiced (Bengtsson & Kock, 2000). The cooperative ties are used to mutually create value with the coopetitors while competition is applied to capture value at the expense of the partner (Ritala & Hurmelinna-Laukkanen, 2009; Brandenburger & Nalebuff, 1996). Although coopetition can appear at different levels, including the individual (e.g., Enberg, 2012), team (e.g., Baruch & Lin, 2012), or network level (e.g., Mantena & Saha, 2012), it is primarily examined on the organisational level between organisations (e.g., Bouncken et al., 2016) or business units of an organisation (e.g., Tsai, 2002). Moreover, some scholars have pointed out the dynamic nature of coopetition (e.g., Hung & Chang, 2012) because goals, market conditions, and roles continuously change and evolve over time.

Based on the definitional insights suggested in the literature, Bouncken et al. (2015a) (Publication 1 in this thesis) have presented the following integrative coopetition definition: “*Coopetition is a strategic and dynamic process in which economic actors*

jointly create value through cooperative interaction, while they simultaneously compete to capture part of that value". By consolidating earlier described features of cooptition, and including the element of simultaneous cooperative and competitive ties, this definition advances previous definition efforts. It emphasises the strategic and dynamic nature of cooptition, incorporates the significance of cooperation and competition for creating as well as capturing value, and refers to actors instead of direct competitors, suppliers, etc., allowing for the existence of cooptition on different levels.

2.2 Innovation

The term "*innovation*" originates from the Latin word *innovare* which refers to making something new (Tidd et al., 2001). This idea of newness is central to all definitions of innovation in some way or the other. For instance, Thompson (1965) defined innovation as a set of activities that seek to explore and exploit business opportunities to generate, accept, and implement new ideas, processes, products, or services. Innovation as such influences firms' management structures (Crossan & Apaydin, 2010) and represents the outcome of an efficient process of new product/service/process implementation within the firm (Schaper & Volery, 2004).

Innovations can take on different forms and vary in complexity (Dibrell et al., 2008). They can range from minor, incremental changes to already existing products, services, and/or processes to the development of breakthrough products, process, and/or services (Dibrell et al., 2008). While incremental innovations may concern mere extensions of currently existing products, services, or processes (Dewar & Dutton, 1986), radical innovations are ground-breaking radically new to the market, require a large stock of new knowledge and/or technology and may lead to disruptive changes in the market (Yang et al., 2014; Bouncken & Kraus, 2013).

The process of innovation is filled with costs, such as the necessary investments in relevant resources and capabilities, and risks (Kirzner, 1978) related to possible investment failure, imitation by competitors, or uncertain customer acceptance (Helpman, 1993). Nevertheless, innovation is recognised as a primary strategic instrument to boost firms' survival, profitability and growth potential because it represents a major source of competitive advantage (Classen et al., 2012).

Given the importance of innovation, prior research has started to uncover what drives firms' innovativeness (Hult et al., 2004). Prior research on the antecedents of innovativeness has often mobilised the RBV and DCV as theoretical foundations (Kyrgidou & Spyropoulou, 2013) to explain differences in performance achievements and competitive advantages among firms as a result of their ability to innovate which is said to be determined by their resource diversity (RBV) (Barney, 1991) as well as their skills and capabilities accumulated over time (DCV) (Teece et al., 1997). In doing so, this research stream seeks to describe how specific resources and capabilities may stimulate the firms' ability to develop innovative products and/or services and lead to performance benefits and growth (Kyrgidou & Spyropoulou, 2013).

So far, it has been argued that many different resources and capabilities can directly influence firm level innovativeness (Rhee et al., 2010) including financial resources to be invested in R&D and innovation processes; a risk-taking ability and willingness with respect to the risk and uncertainty associated with innovation; a proactive attitude in anticipating upcoming changes, needs, and problems; a well-developed customer responsiveness, i.e. the ability to respond to customers' preferences and needs (e.g., Covin et al., 2016; Pesämaa et al., 2013). Firms entrepreneurial, managerial, and technological capabilities (e.g., Kyrgidou & Spyropoulou, 2013) have also frequently been put forward as drivers of innovativeness. Entrepreneurial capabilities facilitate the development of the resource bases required for innovation as well as the recognition of innovative ideas (Kyrgidou & Spyropoulou, 2013); managerial capabilities can result in the identification and exploitation of market opportunities (Ucbasaran et al., 2008) and the creation of appropriate innovations to exploit these opportunities (Ardichvili et al., 2003); and technological capabilities allow firms to quickly adjust to the identified market opportunities (Walsh & Linton, 2002). In similar veins, firms' market orientation, reflecting their market intelligence and responsiveness to market information, and entrepreneurial orientation, referring to their tendency to undertake entrepreneurial actions (Wiklund, 1998), are said to drive innovativeness (e.g., Pesämaa et al., 2013; Harms et al., 2010; Tajeddini, 2010; Hult et al., 2004).

Additionally, learning and the accumulation of knowledge have been found to positively affect firms' innovativeness (e.g., Parra-Requena et al., 2015; Pesämaa et al., 2013; Rhee et al., 2010; Hult et al., 2004). The relevance of learning and knowledge stems from the fact that individual firms rarely possess all necessary resources and skills to innovate independently (Parra-Requena et al., 2015) and they typically do not innovate in a complete vacuum (Freel, 2003). Rather, innovation and the firms' innovation ability tend to be the result of a complex and cooperative interplay between different players (Eggers et al., 2014; Freel, 2003). Through external relationships in the form of, for instance, networks with suppliers or customers, knowledge flows between firms are developed which enable them to learn and accumulate significant complementary knowledge from external sources (Covin et al., 2016; Bouncken et al., 2015b; Parra-Requena et al., 2015; Eggers et al., 2014) and to develop a diverse knowledge base which can influence their innovative propensity (Rodan & Galunic, 2004).

Competitors represent a special and important source of external knowledge since they deal with similar interests and positions regarding markets and technologies (Kim & Parkhe, 2009; Luo et al., 2007) as well as customer needs and uncertainty situations. These akin conditions result in a comparable perception of future changes and facilitate bringing together required complementary resources and knowledge to fuel firm innovativeness and create innovations that are beneficial and profitable for all involved parties (Baumard, 2009). Higher and more diverse stocks of resources and knowledge may thus be the result of cooperative exchange mechanisms, improving the firms' effectiveness and efficiency (Chin et al., 2008) and leading to a win-win situation between competitors with improved innovativeness, firm performance, and competitiveness (Luo, 2007; Quintana-Garcia & Benavides-Velasco, 2004).

2.3 Coopetition - Innovation Nexus

2.3.1 Roles of coopetition for innovation

Cooperation with competitors is of major importance when firms seek to advance their technological progress and innovative capabilities (Gnyawali & Park, 2011). Prior research has stressed the positive relationship between coopetition and innovation (Bouncken et al., 2016; Estrada et al., 2016; Ribeiro-Soriano et al., 2016; Ritala & Hurmelinna-Laukkanen, 2013) by highlighting the positive effect of coopetition on innovation (e.g., Bouncken & Kraus, 2013; Ritala, 2012).

For instance, coopetition can have a positive impact on incremental and radical innovations (Le Roy et al., 2016; Ratzmann et al., 2016; Ritala & Hurmelinna-Laukkanen, 2013; Bouncken & Fredrich, 2012). Differentiating between the different stages in incremental and radical innovation processes, Bouncken et al. (2017) have revealed that coopetition is beneficial for early and later stages of incremental innovation. Yet such benefits apply only to the less uncertain final stages of radical innovations. Additionally, coopetition can positively affect product and process innovation (Estrada et al., 2016; Pereira & Leitão, 2016; Tomlinson & Fai, 2013). Pereira and Leitão (2016), for example, have demonstrated that the development of product innovations is facilitated through the acquisition of external knowledge in high-tech and medium-low-tech manufacturing firms. This effect can be further promoted through coopetition, depending on the competitors' ability to detect and assimilate external sources, formally known as "absorptive capacity". Coopetition can also be beneficial for new product development and introductions (Bouncken et al., 2017; Wu, 2014) and the number of product lines (Quintana-Garcia & Benavides-Velasco, 2004). Moreover, research has emphasised that coopetition is an important strategy in knowledge- and innovation-intensive, dynamic and complex industries that are typically characterised by short product life-cycles, a need for high research and development (R&D) investments, a significance for technological standards, and the required convergence of various technologies (Bouncken et al., 2017; Gnyawali & Park, 2009). In such environments, coopetition has been proposed to facilitate access to crucial resources and capabilities (Carayannis & Alexander, 1999) and to overcome knowledge asymmetries regarding innovation (Enberg, 2012; Brolos, 2009).

It is this exchange of resources, capabilities, and knowledge among competitors which is important for innovation (Estrada et al., 2016; Brolos, 2009) when firms face limitations in their internal stock of resources and knowledge that potentially impede their innovation power (Camison-Zornoza et al., 2004). Typically, despite its crucial relevance, knowledge is not shared equally among firms (Enberg, 2012) and the same holds true for resources and capabilities. Some firms possess resources, capabilities, and knowledge that others have not internalised and vice versa. Therefore, firms are rarely self-sufficient when innovating (Freel, 2003).

In fact, when cooperating, competitors have numerous opportunities to share, integrate, recombine, and create supplementary and complementary resources (Estrada et al., 2016) which can lead to synergies and innovative opportunities (Ricciardi et al., 2016; Nasr et al., 2015; Gnyawali & Park, 2009; Padula & Dagnino, 2007). Indeed, coopetitors can pool their R&D activities (Walley, 2007) and get access to the competitors' resources and knowledge (Le Roy & Czakon, 2016; Enberg, 2012; Bengtsson & Kock, 2000) which can promote innovation (Czernek & Czakon, 2016; Estrada et al., 2016).

However, coopetition is not only important to share and acquire resources and knowledge from the partner, but also to jointly develop new knowledge and resources based on mutual development (Ritala et al., 2014; Quintana-Garcia & Benavides-Velasco, 2004). In fact, competing partners can jointly create a common knowledge base using all partners' experience and expertise (Ritala & Hurmelinna-Laukkanen, 2009). As a result, they can enlarge their technological diversity (Quintana-Garcia & Benavides-Velasco, 2004), improve their innovation capacity (Ritala, 2012; Bonel & Rocco, 2007), and expand knowledge generation and diffusion (Yami & Nemeh, 2014; Ritala & Hurmelinna-Laukkanen, 2009). Additionally, competition among coopetitors drives them to create and introduce new products and/or services (Le Roy & Czakon, 2016) that they would not be able to develop without the coopetitor or only much later (Walley, 2007). Hence, when rivals cooperate in innovation processes, innovation is no longer just a firm-internal process (Lasagni, 2012); it becomes a complex, intertwined action between various individual parties that each contribute resources, capabilities, and knowledge to the final product and even jointly co-create new knowledge and technologies that can lead to technological breakthroughs and innovations (Ritala et al., 2014; Bougrain & Haudeville, 2002).

Despite the tempting advantages of coopetition in terms of the exchange of resources, capabilities, and knowledge as well as technology and innovation creation, firms need to consider specific risks and challenges, too (Le Roy & Czakon, 2016), especially when it comes to coopetition focused on innovation activities. In fact, coopetition and the management of cooperative ties is challenging (Gnyawali & Park, 2009), sometimes dangerous (Pellegrin-Boucher et al., 2013), and filled with tensions (e.g., Le Roy & Czakon, 2016; Le Roy & Fernandez, 2015; Fernandez et al., 2014; Tidström, 2014) due to the numerous sources of risks and conflicts that stem from the complexity and interdependent nature of coopetition.

For example, coopetition can lead to instability and a number of tensions "due to inherent contradictory and opposing forces" (Fernandez et al., 2014, p. 224) which is why coopetition is not always an easy and straight-forward task. In fact, coopetition is paradoxical in nature given the simultaneous existence of the two contradicting logics of interaction, cooperation and competition, in the same inter-firm relationship (e.g., Bengtsson et al., 2016; Tidström, 2014; Pellegrin-Boucher et al., 2013). This "simultaneity" is called the "crux" of coopetition as two contradictory yet interrelated forces are simultaneously in place which make the relationship irrational, inconsistent and absurd (Bengtsson et al., 2016).

Existing research has identified diverse sources of tension in cooptition on different levels (e.g., Fernandez et al., 2014; Tidström, 2014). As such, tensions have been demonstrated at the (inter-) individual, (inter-/intra-) organisational, and project level (e.g., Fernandez & Chiambaretto, 2016; Fernandez et al., 2014; Raza-Ullah et al., 2014). Focusing on the inter-organisational level, since cooptition among competing SMEs represents the focal point of this thesis, a first tension lies in the difficulty to enable common value creation with a competitor while seeking to appropriate a maximum share of the jointly created value (Fernandez et al., 2014; Ritala & Tidström, 2014). Although cooperation offers resource- and knowledge-sharing possibilities among rivals and facilitates the creation of common benefits in the form of mutually developed and new technologies and innovations (Ritala et al., 2014; Quintana-Garcia & Benavides-Velasco, 2004), competition implies that the cooperating competitors aim to outcompete each other by means of unique competitive advantages (Le Roy & Czakon, 2016). Therefore, after knowledge and technologies have been mutually developed, tensions can arise when cooptitors start to capture as much value as possible (Cassiman et al., 2009). Further inter-organisational tensions include the risk that coopting competitors are able to imitate the focal firms technologies or the risk that technological and confidential knowledge and information may unintentionally leak from one firm to the other (Fernandez et al., 2014), which represent a severe loss of control over the innovative process (Ritala & Hurmelinna-Laukkanen, 2013).

Additionally, cooptitors' strategies and goals may be different when engaging in cooperation with competitors and they may have "hidden priorities" (Fernandez et al., 2014, p. 223) as, for example, know-how imitation or competitor outlearning (Hamel, 1991). Relatedly, cooptition comes with the risk of opportunism. In fact, pooling and sharing knowledge and resources can motivate cooptitors to develop an opportunistic mindset. As such, they either may use their power to force their coopting partners to act in their best interest, or they may appropriate jointly developed knowledge and expertise for their advantage at the expense of the cooptitor (Bouncken & Kraus, 2013; Pellegrin-Boucher et al., 2013).

These tensions may suggest a negative role of cooptition for innovation as the difficulties to create and appropriate value, to avoid technology leakage and imitation, and to minimise opportunism can hamper the development of innovations (Cassiman et al., 2009). Therefore, cooptition and its dynamics represent a particular vulnerability and firms must carefully balance knowledge sharing against knowledge protection (Pellegrin-Boucher et al., 2013) and cooperation against competition since cooperation and competition co-exist in cooptitive relationships (Le Roy & Czakon, 2016). A pro-active management is needed to make sure "what to share, with whom, when and under which conditions" (Levy et al., 2003, p. 642). Firms need to decide on what to integrate and what to separate with respect to technologies, working procedures and organisational units (Burström, 2012). Burström (2012) calls this the "need for tuning" and Osarenkhoe (2010) warns that "adopting a cooptitive state of mind is not enough; it is important to manage this strategy".

In summary, research has thus pointed out that coopetitors can benefit from both cooperation and competition (Le Roy & Czakon, 2016). However, the double-edged consequences of coopetition (Bouncken & Fredrich, 2012) especially in relation to innovation should not be neglected, as coopetition can lead to positive effects on the cooperating firms' innovation, performance, and growth as well as negative consequences in the form of opportunism, tensions, and limitations.

2.3.2 SMEs' innovation challenges and the roles of coopetition

In today's intensifying economic environment, SMEs' success depends highly on their engagement in innovation development (Madrid-Guijarro et al., 2009). Through innovation, they may increase their productivity, growth, and survival potential (Cefis & Marsili, 2006; Heunks, 1998). However, innovation is especially difficult for SMEs (Morris et al., 2007) because they encounter specific challenges in the forms of external (external environment, uncertainty) and internal (resources, knowledge) factors that may hinder their innovation capability.

First, SMEs are vulnerable since they are exposed to economic and demand fluctuations and uncertainties in the external environment. These conditions are particularly risky for these firms due to their lower market presence, the high speed of technological changes, rising R&D costs, associated risks, and competitive pressures (Gnyawali & Park, 2009; Morris et al., 2007).

Second, SMEs typically experience a liability of smallness in terms of fewer capital and tax advantages, as well as proportionally greater regulation costs (Aldrich & Auster, 1986). Furthermore, this liability is expressed by a limited base of resources and knowledge (Bengtsson & Johansson, 2014; Gnyawali & Park, 2009; Morris et al., 2007), impeding their innovation capability (Madrid-Guijarro et al., 2009). Gaining access to financial resources in the form of debt financing, for instance, may be difficult for SMEs (Hewitt-Dundas, 2006). Further, they face the problem of attracting, keeping, and training qualified personnel who can effectively implement innovation in the firms' overall business strategies (Freel, 2000). Moreover, SME owners and managers tend to have limited external contacts, which can constrain their firms' innovation power (Madrid-Guijarro et al., 2009). Relatedly, SMEs often do not possess a sufficiently large and diverse stock of complementary assets and knowledge (Gans & Stern, 2003) which is needed to develop and commercialize innovations (Leiponen & Helfat, 2010), resulting in a poor innovation performance (Rosenbusch et al., 2011).

To surmount these challenges, SMEs can establish alliances with external partners (Flatten et al., 2011; Nieto & Santamaría, 2010; Baum et al., 2000). Through cooperation, SMEs complement their restrained resources and knowledge by gaining access to external actors' knowledge and assets. Cooperating with external partners can help to limit SMEs' liability of smallness as it facilitates access to diverse sources of resources and knowledge (Colombo et al., 2009). Indeed, SMEs cooperate with large suppliers and major customers (Smith et al., 1991), other SMEs in different geographical areas (Molina-Morales &

Martínez-Fernández, 2010), universities (Motohashi, 2005), and also with their competitors (Bengtsson & Johansson, 2014; Kock et al., 2010; Czakon, 2009).

Cooperating with competitors has some crucial advantages over traditional strategic alliances with customers or suppliers. In fact, scholars have suggested that SMEs should engage in cooptition (Bouncken & Kraus, 2013; Levy et al., 2003) to fuse the benefits of simultaneous cooperation and competition (Bengtsson & Kock, 2000). Some general advantages for SMEs resulting from of cooptitive relationships include the ability to create synergies, to decrease uncertainty and costs, to improve economies of scales (Gnyawali & Park, 2009) and to improve financial performance (Levy et al., 2003). Further, coopting SMEs are able to generate joint profits, develop an ability to mutually overcome industry pressure (Gnyawali & Park, 2009), and increase legitimacy in the market (Bengtsson & Johansson, 2014). Focusing on internationalisation efforts, cooptition can create additional international opportunities for SMEs (Kock et al., 2010). As such, cooptition represents a means of increasing SMEs' survival potential (Tidström, 2009) because they can compete more effectively against large competitors (Gnyawali & Park, 2009).

Moreover, cooptition comes with potential advantages for SMEs' technological progress and innovation capability that can help them to conquer innovation challenges. Typically, SMEs struggle to develop technologies or major innovations on their own, because of the high associated costs, risks, and uncertainties (Gnyawali & Park, 2009). In this situation, cooptition may be important because it enables competitors to pool existing, critical, and complementary resources and capabilities to mutually create new resources and capabilities, as well as to share the risks and costs associated with R&D, an speed up and foster innovation (Gnyawali & Park, 2009; Quintana-Garcia & Benavides-Velasco, 2004). Cooptition can have a positive impact on SMEs' innovation capacity, including the development of product lines and diverse technological innovations (Gnyawali & Park, 2009; Quintana-Garcia & Benavides-Velasco, 2004). Therefore, cooptition may be a key compensating strategy for SMEs suffering from liabilities of smallness in the form of resource and knowledge shortages (Lechner & Dowling, 2003).

Cooptition entails not only potential benefits but also risks for participating organisations as outlined in the previous section. Given the SMEs' small, resource- and knowledge-constrained nature, however, the disadvantages related to cooptition in the form of cooptitive tensions can have more severe implications for them than for large, established firms. The danger of cooptition for SMEs can derive from power asymmetries that occur when SMEs partner with larger rivals (Bengtsson & Johansson, 2014). As a result of power asymmetries, a stronger cooptitor may use its power advantage to act opportunistically and force the weaker and smaller partner to accept conditions that are primarily in the economic benefit of the stronger party (Gulati & Sytch, 2007). Further, resources like technological know-how or intellectual property can be lost easily to a stronger partner (Bengtsson & Johansson, 2014; Fernandez et al., 2014) if no protection mechanisms are in place, because small firms are often unable to defend

themselves against attacks after cooperative ties have been established (Katila et al., 2008).

For SMEs, it may be more important to protect their core technologies and knowledge from unintentional leakages to their (larger) rivals as their long-term survival typically depends on their technologies and innovations. As such, coopetition may play a negative role for innovativeness and competitiveness when SMEs' competitors are able to appropriate or imitate their core knowledge, know-how, or technologies. Additionally, SMEs are confronted with the threat of losing control, flexibility and freedom, becoming increasingly dependent on the larger rival (Gnyawali & Park, 2009).

2.3.3 Young SMEs' innovation challenges and the roles of coopetition

Young SMEs represent a special organisational form of SMEs that experience an additional liability to the liability of smallness given their small size and *young age* (Morris et al., 2007). The so-called liability of newness is associated with a greater risk of failure which stems from the young firms' lack of legitimacy in the market, their less stable internal structures that enable the collaboration of strangers, and their inability to compete effectively against older, more established firms (Aldrich & Auster, 1986; Stinchcombe, 1965). Additionally, owners and managers of new market entrants are likely to be unfamiliar and inexperienced with their roles (Carayannopoulos, 2009; Morris et al., 2007) and the firms lack established effective and stable work routines, roles, and relationships (Baum et al., 2000) with internal and external stakeholders (Carayannopoulos, 2009; Freeman & Engel, 2007).

This liability of newness is further associated with young SMEs' difficulty in attracting a sufficiently large range of (financial, human and social) resources right from the foundation of the firm. Since young firms tend to lack extended track records with customers and suppliers (Baum et al., 2000), they are rather unattractive to external investors, especially in their very early stages of business operations (Connelly et al., 2011). For example, young SMEs usually start operations with few funds and lacking reputation among customers and suppliers. Research has shown that 81% of the Inc. 500 founders created their firms using their personal savings, money from their families and friends, bank loans, mortgages, or credit cards (Bhidé, 2003). However, access to these missing resources is necessary for their future growth (Teece, 1986). Consequently, young SMEs may be constrained in their capabilities to exploit existing knowledge and entrepreneurial opportunities on their own, to engage in innovation development, and to invest sufficient resources in R&D processes.

Hence, to ensure immediate and continuous access to external, complementary resources and knowledge to counteract potentially negative implications of their liabilities, founders of young SMEs often engage in collective and collaborative actions with different stakeholders (Franco & Haase, 2013). The special implications of cooperation with competitors are not limited to SMEs but can be of major importance in the early, start-up

stages of SMEs, too. In fact, the combination of the liability of smallness and liability of newness give young firms a particularly strong incentive to engage in coopetition.

Through cooperative ties with competitors, young SMEs can enter markets and develop scale economies that they would not have been able to enter or develop alone (Morris et al., 2007). Furthermore, these firms can gain access to critical, complementary, but not yet internalised resources and knowledge (Lechner et al., 2016; Morris et al., 2007; Quintana-Garcia & Benavides-Velasco, 2004) engage in mutual R&D activities (Afuah, 2000) and develop and apply previously unavailable technologies (Morris et al., 2007) that may result in major innovations.

Furthermore, young SMEs can share risks and costs with their partners (Gnyawali & Park, 2009; Morris et al., 2007). The risk and cost reduction possibilities may be particularly important for young and small organisations, given their high risk of failure deriving from their restrained financial and human resources (Stinchcombe, 1965). As such, coopetition with larger, older, and more experienced but competing firms may help young firms to sell their products faster, achieve more stable sales, and free up time for other important business activities (Lechner et al., 2016; Weiblen & Chesbrough, 2015; Lechner & Dowling, 2003). Moreover, these collaborations improve the young SMEs' social capital through which they can benefit from knowledge and information exchanges and learn about relevant organisational processes (Lechner et al., 2016).

Additionally, coopetition between young SMEs and corporations can benefit both the young and emerging SMEs and the larger, older, more established corporation. Each party has something that the other is looking for (Freeman & Engel, 2007; Weiblen & Chesbrough, 2015). On the one hand, young SMEs possess innovative ideas, the willingness to take risks, and high growth aspirations. Further, they may have specialist knowledge and tend to be more flexible and faster in exploring new technologies or creative business models than large firms (Hogenhuis et al., 2016). Stemming from these characteristics, competing young and small firms are attractive partners to larger firms who seek to increase their innovation processes and outputs and access new technologies and ideas (Marion & Friar, 2012). More established corporations, on the other hand, have far-reaching stocks of resources, routines, and experiences (Weiblen & Chesbrough, 2015), that can be of particular interest to young and resource-constrained firms.

Cooperation with larger, older rivals, however, can be a risky endeavour for young SMEs (Lechner et al., 2016; Soppe et al., 2014) as they face the risk of being taken over or imitated by their cooperation partners. In fact, young firms are particularly vulnerable when they are cooperating with larger, more established competitors (Lechner et al., 2016; Chung, 2012) due to their lack of negotiation power and necessary resources to manage business dynamics effectively (De Rond & Bouchikhi, 2004). Further, young and small firms run the danger of becoming (too) dependent on the larger partner or losing control over their relevant resources and knowledge. This may hamper their survival prospects (Ketchen et al., 2007). Only when the tension between the need for external assets and the risk of being taken over by "corporate sharks" (Katila et al., 2008, p. 295)

is balanced carefully, can inter-firm partnerships with competitors be exceptionally valuable due to the shared business context and challenges and relevant and complementary resources and capabilities (Soppe et al., 2014).

2.3.4 Family SMEs' innovation challenges and the roles of coopetition

Family firms are “governed and/or managed with the intention to shape and pursue the vision of the business held by a dominant coalition controlled by members of the same family or a small number of families in a manner that is potentially sustainable across generations of the family or families” (Chua et al., 1999 p. 25). Being family firms, family SMEs, as second studied sub-group of SMEs, possess an additional characteristic that may determine their innovation behaviour: the influence of the family in ownership, management, and governance.

In fact, studies have revealed that families' participation in ownership, management, and governance - family firms' main distinguishing characteristic - affects firms' distinctive goals, strategies, performance outcomes (Dyer, 2006), and innovation (Chrisman et al., 2015). Usually, family members pursue both economic (Chrisman & Patel, 2012) and socioemotional, non-economic wealth (Gómez-Mejía et al., 2007), which includes the owning family's intent to (1) exert influence on the firm, (2) maintain a strong family identity with the firm, (3) preserve clan membership within the firm, (4) retain emotional attachment, and (5) ensure intra-family succession (Berrone et al., 2012, 2010). These economic and non-economic objectives are not always aligned. Often, family members emphasise their non-economic intentions and are willing to sacrifice economic gains (Chrisman & Patel, 2012) to preserve their levels of non-economic SEW (Kammerlander & Ganter, 2015) as their primary reference point. This is not an eventual economic gain, but the risk of a potential loss of SEW (Cesinger et al., 2016; Gómez-Mejía et al., 2007).

In family SMEs, the impact of family involvement on strategic decisions may be even more significant than in their larger counterparts. In larger family firms, the distance between family members and the business may grow (Chrisman et al., 2012). Therefore, decision-making may be, at least partly, determined by professional, possibly non-family managers and more independent boards of directors and ownership may be dispersed among a wider range of owners. In family SMEs, however, the dominant family and its members enjoy greater authority, control, and autonomy in their decision-making due to the concentration of ownership and management that allows them to impose their own objectives upon the firm and its' strategic behaviour (Miller et al., 2008). This strong influence of active family members may determine family SMEs' strategic decisions.

Despite family SMEs' omnipresence, they have almost been entirely neglected in prior coopetition research (Gast et al., 2015). Given this lack of research, insights on coopetition in SMEs may represent a valuable building block for exploring coopetition in the particular context family SMEs. Similar to SMEs, family SMEs suffer from shortages of resources, knowledge, and technologies that constrain internal product development and innovation (Kim & Vonortas, 2014; Sirmon & Hitt, 2003). As an example, family

SMEs have a higher likelihood to invest in innovation, but they do so less intensively than their non-family counterparts (Classen et al., 2014).

Compared to non-family SMEs, this restriction in resources and knowledge, however, is coupled with specific family firm characteristics that stem from family ownership and control (Chrisman et al., 2012) and may determine their resources and strategies. In fact, family members' intention to maintain the status quo of their SEW can have a significant effect on innovation (Li & Daspit, 2016). Either the desire to transfer SEW and the firms across generations induces a conservative, risk-averse innovation strategy in which the risk of losing wealth or control is minimised; or, families engage in risk-seeking activities, such as innovation, to generate more wealth and increase the firms' ability to survive in the long-run. Hence, family SMEs and their managers are in need of effective strategic instruments that promote innovation given their limitations in resources and the possibly negative effect of family members' SEW goals.

Thus, when exploring firms' strategies, scholars have argued that family SMEs exhibit different behavioural patterns compared to their non-family counterparts (Chrisman et al., 2016). Given the family members' involvement in the firm, their preferences in terms of economic and SEW goals determine the firms' strategies. While the impact of the families' SEW preferences has already been shown to influence innovation decisions, research is lacking that explores the potential influence of family members in terms of their SEW goals on competition in family SMEs.

This is rather remarkable since, in addition to their internal resource constraints, various reasons insinuate why family firms and family SMEs seek connections with external parties (Miller et al., 2008) through business networks, alliances or inter-firm collaboration (Courrent & Gundolf, 2009). These reasons include challenges related to environmental changes and the family SMEs' vulnerability given their autonomous, family-oriented standing (Gómez-Mejía et al., 2007). Further, they have difficulties in gaining market power equal to non-family firms or in establishing or expanding their market position on their own (Niemelä, 2004; Baum et al., 2000). Accordingly, they engage in cooperation with external partners to gain access new skills, tacit knowledge, and information, as well as to develop new capabilities, enhance core competencies, and mitigate risks and uncertainties (Spriggs et al., 2013) and to improve growth and prosperity (Street & Cameron, 2007).

Facing such situations, family SMEs are expected to look for creative, innovative ways to enrich their insufficient resources and knowledge and reduce their liabilities. Strategic alliances with external partners can represent a possibility to gain access to missing resources and knowledge. Empirical findings on family SMEs' engagement in external collaborations, however, are rather ambiguous. On the one hand, family SMEs have a lower search breadth, i.e. narrower external sources, to rely on to gain access to resources for innovation, than non-family SMEs (Classen et al., 2012). On the other hand, they rely on a relatively high number of external collaborations for innovations (De Massis et al.,

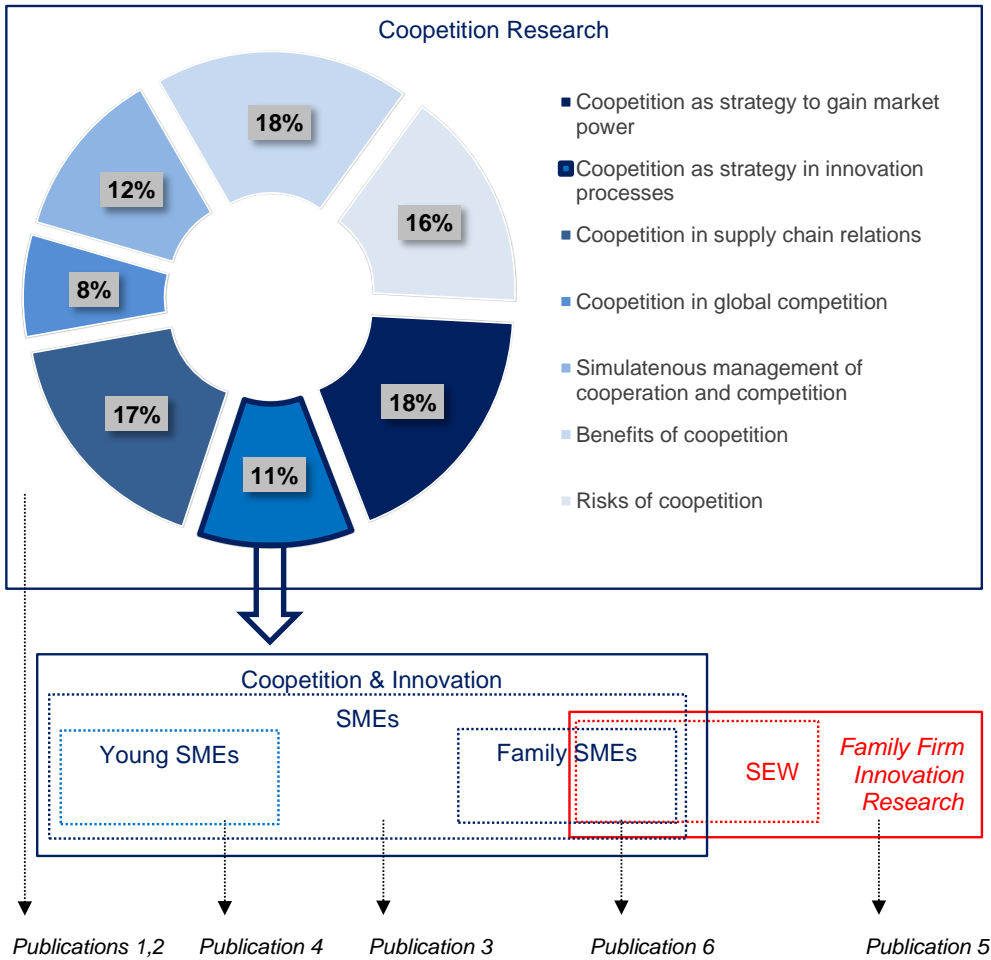
2015). As such, family SMEs represent an interesting context to explore coopetition and its role for innovation in more detail.

2.4 Positioning of the Thesis

This thesis is mainly positioned in the academic field of coopetition research as presented in Figure 1. In particular, the thesis seeks to explore how coopetition can boost innovation in SMEs, including young SMEs and family SMEs (main research question).

The need for a detailed synthesis of existing coopetition research directs the sub-question underlying Publications 1 and 2; these contributions present, analyse and interpret the state-of-the-art coopetition research. The identified research gaps concerning the limited analysis of different SME types are addressed in the next publications. While Publication 3 analyses SMEs in general, Publication 4 focuses on young SMEs and corporations. To understand the relationship between coopetition and innovation in family SMEs, Publications 5 summarises prior family firm innovation research. As such, this publication sets the stage for the following examination of the role of coopetition for innovation in family SMEs by providing an overview of the state-of-the-art family firm innovation research. The intersection between family firm research and coopetition research represents the guiding theoretical background for Publication 6 in which coopetition among family SMEs is examined in an innovation-intensive industry.

Figure 1. Positioning of the individual publications*



* Percentages as indicators of the relative importance of different research streams in coopetition research based on the insights obtained through the systematic literature review presented in Publication 1.

3 Methods

This thesis includes six individual publications, each focusing on a sub-question related to the topic under scrutiny. This chapter presents the methodological approach taken in the thesis and the publications. In particular, the research design strategy and the methodological choices, data collection, and data analysis for each publication, as well as the overall quality of the research are discussed.

3.1 Research Design Strategy

This thesis aims to shed light on the effect of coopetition on innovation in SMEs, including the typical two sub-groups of young SMEs and family SMEs. It is worth noting that the thesis is comprised of conceptual and empirical publications to accommodate the multi-faceted character of coopetition and innovation, and to provide a comprehensive picture on the role of coopetition for innovation. This multi-method research design implies that different scientific methods are applied in the individual publications.

This thesis develops a literature foundation of existing coopetition research with a general review of the relevant literature base on coopetition and a fine-grained overview of prior research efforts and remaining open questions. Therefore, Publication 1 reveals the insights gained from a systematic literature review, while Publication 2 presents the first meta-analysis in this field. These publications lay the groundwork for the further empirical inquiry of the link between coopetition and innovation in SMEs.

In an attempt to better understand the roles of coopetition for innovation in different resource-constrained SMEs, Publication 3 examines coopetition as innovative strategy in French SMEs by means of a longitudinal case study. Publication 4 focuses on the nature of coopetition among young SMEs and larger, older, established corporations using a multiple case study of Austrian firms.

As the next set of publications focuses on family SMEs, Publication 5 serves as introduction to the specificities of family firm innovation. This work combines a citation analysis with a systematic literature review to compare past and present research, and identify research gaps in the current literature in this field. Then, to explore how family SMEs can boost innovation through coopetition, Publication 6 presents a single qualitative case study of a German IT business network of coopeting family SMEs.

Given the compound nature of coopetition and its nascent theoretical understanding, this thesis is exploratory in nature as it seeks to increase the present knowledge on coopetition (Creswell, 2014) which is a topic that lacks a well-structured theoretical base. As such, this thesis applies a qualitative research approach to contribute to theory-building within this field (Eisenhardt, 1989). Qualitative research refers to a set of different research approaches which seek to develop a holistic, complex, and detailed understanding of a specific issue (Creswell, 2007).

This thesis uses three different case study methods, namely longitudinal, multiple, single case studies, to present an in-depth investigation of coopeitition in different SME settings. The longitudinal case study method seemed particularly suited for Publication 3 since coopeitition is a complex and dynamic strategy and the sequence of the events of the analysed partnership was important (Yin, 2009; Eisenhardt, 1989; Bresser & Harl, 1986). Additionally, this approach facilitated the investigation and interpretation of the development of coopeitition over time (McLeod & Thomson, 2012). The multiple case study method was chosen for Publication 4 as it is especially helpful for theory-building. By providing the analysis of coopeitition across different entities (Yin, 2009), i.e. young SMEs in Publication 4, cross-case analyses were possible which supported the further development of the particular research field (Eisenhardt & Graebner, 2007). In Publication 6, the single case study method enabled a deep analysis of coopeitition in family SMEs (Yin, 2009). This method was chosen since coopeitition in family-owned organisations including family SMEs represents a topic which has received minor research attention so far and the existence of coopeititive ties among family SMEs still requires a thorough examination. As a result of the single case study in Publication 6, the nature of coopeitition in this specific context was examined in-depth (Siggelkow, 2007).

At this point, it should be noted that different industry settings were analysed in these three empirical studies, including the wine sector in Publication 3, innovative industries in Publication 4, in particular, ISIC sections C (manufacturing) and J (information and communication), as well as the IT industry in Publication 6. The international wine industry has undergone a crisis of massive overproduction and increased international competition from the 1990s onwards, leading to the emergence of large industry players (Anderson, 2004). This development as well as the structural lack of resources drove smaller players, in particular SMEs, into coopeitition (Dana et al., 2013). Therefore, the setting of the French wine sector allowed to analyse how coopeitition was initiated due to external factors, i.e. the turbulent and dynamic environment in the wine industry, as well as resource- and knowledge-shortages, and how coopeitition then enabled the coopeiting SMEs to survive in the long-run. Publications 4 and 6 have in common that they focus on knowledge- and innovation-intensive industries. Because innovation plays a crucial role for the firms' long-term survival in these complex and dynamic sectors, resource- and knowledge-sharing mechanisms facilitated through coopeitition are particularly relevant (Gnyawali & Park, 2009; Carayannis & Alexander, 1999). Therefore, these industries represent a well-suited context to explore the roles of coopeitition for innovation.

This combination of three case study methods applied in different industries results in a comprehensive qualitative assessment of the roles of coopeitition for innovation in different SME contexts, including the two sub-groups young SMEs and family SMEs. However, limitations in terms of generalisability should be taken into consideration when interpreting the findings and applying the implications to other contexts. The associated limitations are outlined in detail in the final chapter.

The sub-questions, methodological choices, and data sets of each publication are summarised in Table 3 and described in detail in the subsequent sub-sections.

Table 3. Overview of the thesis in terms of research methods

Part I: Thesis overview	
Main research question <i>How can coopetition benefit innovation in SMEs?</i>	
Part II: Publications	
Introduction to coopetition	
Sub-question 1 <i>What is the current state-of-the-art research on coopetition? Where can research go from here?</i>	
<p style="text-align: center;">Publication 1</p> <p>Coopetition: A Systematic Review, Synthesis, and Future Research Directions</p> <p style="text-align: center;">Method</p> <p>Systematic literature review</p> <p style="text-align: center;">Data</p> <p>Existing coopetition research</p>	<p style="text-align: center;">Publication 2</p> <p>Lifting the Veil: Early Effects on Antecedents and Consequences of Coopetition from a Meta-analysis</p> <p style="text-align: center;">Method</p> <p>Meta-analysis</p> <p style="text-align: center;">Data</p> <p>Existing empirical coopetition research</p>
Roles of coopetition for innovation in SMEs	
Sub-question 2 <i>What roles does coopetition play for innovation in SMEs?</i>	
<p>Publication 3</p> <p>Organisational Innovation and Coopetition between SMEs: A Tertius Strategies Approach</p> <p style="text-align: center;">Method</p> <p>Qualitative single case study</p> <p style="text-align: center;">Data</p> <p>Interviews with 16 industry key players & 45 managers, secondary data</p>	
Young SMEs	Family SMEs
Sub-question 3 <i>What roles does coopetition play for innovation in young SMEs?</i>	Sub-question 4a <i>What is the current state-of-the-art research on innovation in family firms? Where can research go from here?</i>
<p style="text-align: center;">Publication 4</p> <p>David and Goliath: Causes and Effects of Coopetition between Start-ups and Corporates</p> <p style="text-align: center;">Method</p> <p>Qualitative multiple case study</p> <p style="text-align: center;">Data</p> <p>Interviews with 35 start-ups & 35 corporations, secondary data</p>	<p style="text-align: center;">Publication 5</p> <p>Innovation in Family Firms: Examining the Inventory and Mapping the Path</p> <p style="text-align: center;">Method</p> <p>Bibliometric citation analysis Systematic literature review</p> <p style="text-align: center;">Data</p> <p>Existing family firm innovation research</p>
	Sub-question 4b <i>What roles does coopetition play for innovation in family SMEs?</i>
	<p style="text-align: center;">Publication 6</p> <p>Coopetition of Small- and Medium-Sized Family Enterprises: Insights from an IT Business Network</p> <p style="text-align: center;">Method</p> <p>Qualitative single case study</p> <p style="text-align: center;">Data</p> <p>Interviews with 11 CEOs, secondary data</p>

3.2 Method Description, Data Collection, and Analysis

This section reveals the methodological choices, data collection, and analyses for the publications included in this thesis. With careful consideration, all publications used different scientific approaches (and combinations of approaches) to meet each publication's individual research objectives.

The section starts first by presenting the methods which have been applied to analyse the existing cooptation literature in Publications 1 and 2 (systematic literature review, meta-analysis respectively) as well as prior family firm innovation research in Publication 5 (systematic literature review and bibliometric citation analysis). It then continues with the explanation of the case study research conducted in Publications 3, 4, and 6.

3.2.1 Systematic literature review

Method description

A literature review represents a crucial stage in any research process; it analyses the foundations of an individual research stream, portrays the literature bases' strengths and weaknesses, generates valuable insights, and even identifies future research opportunities (Onwuegbuzie et al., 2010). Following recent calls for a strengthened methodological rigor of management literature reviews (e.g., Thorpe et al., 2005) and consolidating the research across the domains, the literature reviews in this thesis are systematic, evidence-informed literature reviews (Tranfield et al., 2003). This implies a well-documented, replicable and transparent search procedure that improves the quality of the review process and the outcome. This method has frequently been applied in recent business/management research (e.g., Werner et al., 2014; Cesinger et al., 2012).

Publications 1 and 5 present systematic literature reviews. Publication 1 pictures a fine-grained synthesis of existing cooptation literature and contributes to the insights of different systematic literature reviews which have been published in the field of cooptation so far (e.g., Bengtsson & Raza-Ullah, 2016; Dorn et al., 2016; Bengtsson & Kock, 2014; Czakon et al., 2014). Czakon et al. (2014) have proposed the insights from cooptation studies related to business and strategy and have analysed a sample of 82 articles along the following lines: origin, features and definitions of cooptation, applied theoretical lenses, and empirical research foci. Bengtsson & Kock (2014) have summarised cooptation literature published between 1994 and 2012. By demonstrating a synthesis of the existing understanding of cooptation as a concept and the previously applied research streams and approaches, the authors have developed five questions for future research on cooptation. Bengtsson & Raza-Ullah (2016) have studied 142 journal articles published between 1996 and 2014 and have suggested a framework by integrating prior knowledge on cooptation drivers, processes, and outcomes. Dorn et al. (2016) have concentrated on cooptation research from 1992 to 2014 and have reviewed the literature according to the phases of initiation, managing and shaping, and evaluation.

Given these previous systematic review of coopetition research, Publication 1 explicitly analyses coopetition along the lines “scope and development of coopetition research”, “coopetition as a strategy” and “management of coopetition” to lay out prior knowledge on coopetition as a strategy for, among others, innovation processes and the understanding of the challenging nature of coopetition management.

In addition, Publication 5 examines the present state-of-the-art literature on innovation in family firms. Since family-owned organisations are said to innovate differently, Publication 5 provides a foundation for the further examination of the roles of coopetition for innovation in the particular context of family SMEs.

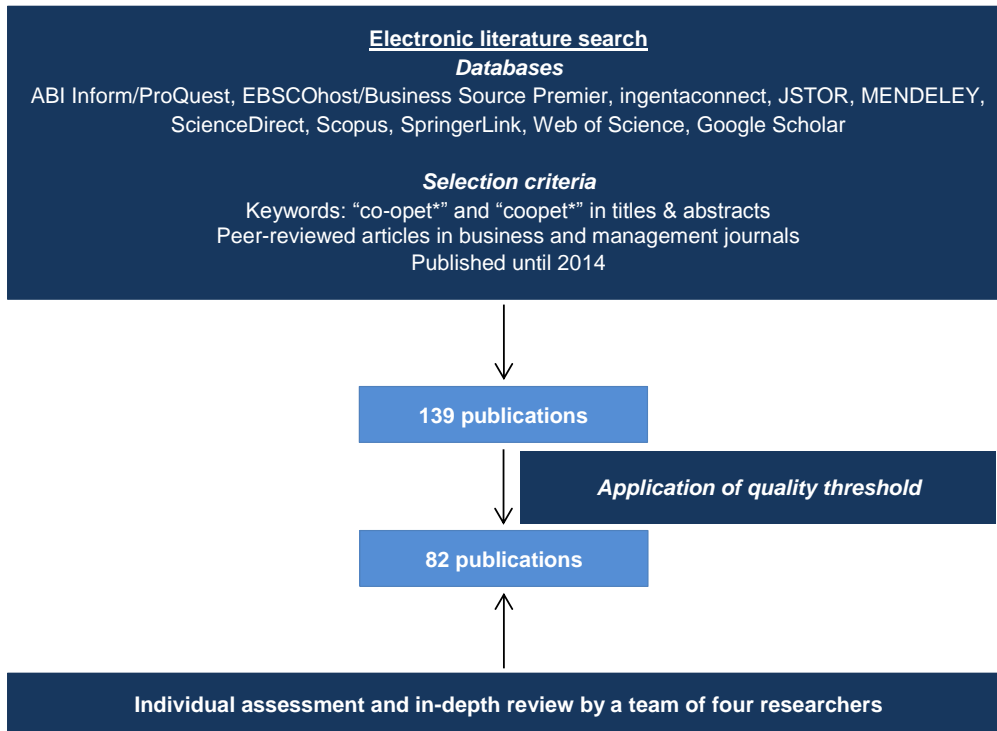
In doing so, both publications provide a groundwork for the empirical contributions by examining the existing research inventory on coopetition and family firm innovation in a structured way.

Data collection and analysis: Publication 1

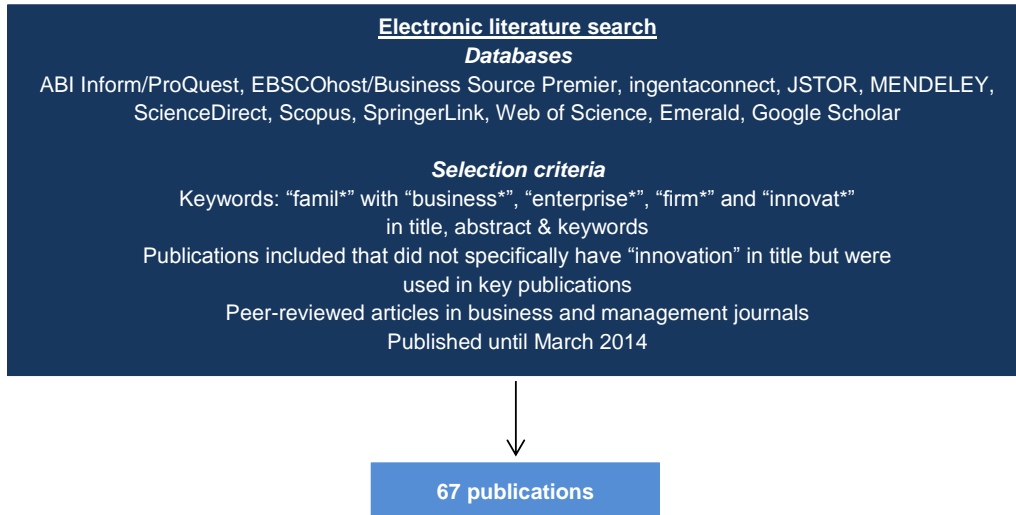
Figure 2 displays the process of identifying publications on coopetition in peer-reviewed academic business and management journals, excluding books, book chapters, discussion papers, and non-refereed publications (Ordanini et al., 2008). First, a sample of 139 publications was identified. Based on a quality threshold, only articles that were published in academic journals ranked at least at a “C” level or higher in at least one of the three top journal rankings were included (see Table 4). After this restriction, a final sample of 82 high-quality scholarly articles was reached.

Table 4. Conversion table of leading academic journal rankings

VHB Jourqual	ABS	JCR Impact Factor
A+	4*	≥ 3
A	4*	≥ 2
B	3*	≥ 1.5
C	2*	≥ 0.7
D	1*	≥ 0

Figure 2. Systematic research approach Publication 1**Data collection and analysis: Publication 5**

The systematic literature review on family firm innovation, presented in Publication 5, was based on a large sample of scientific peer-reviewed journal articles. Figure 3 depicts the process of identifying peer-reviewed academic publications. The full sample of 67 articles was extensively reviewed by all co-authors, whereby the contents (author names, publication year, publication title, journal, reference type, study subjects and research findings) of the identified publications were analysed and the individual evaluations transcribed into an Excel spreadsheet. These assessments were compared and discussed until topic clusters were identified, with the agreement of all co-authors.

Figure 3. Systematic research approach Publication 5

3.2.2 Meta-analysis

Method description

A meta-analysis is a “statistical analysis of a large collection of analysis results from individual studies for the purpose of integrating the findings” (Glass, 1976, p. 3). This analysis represents the attempt to synthesise and systematically combine data from multiple investigations to overcome individual studies’ limits of size or scope, seeking to identify more reliable effects (Berman & Parker, 2002). A meta-analysis is appropriate when prior empirical findings in a research domain tend to be conflicting or ambiguous, or when different theory-based perspectives exist in the literature (Rosenbusch et al., 2011).

Publication 2 presents the insights from the first meta-analysis on coopetition and its antecedents and consequences.

Data collection and analysis

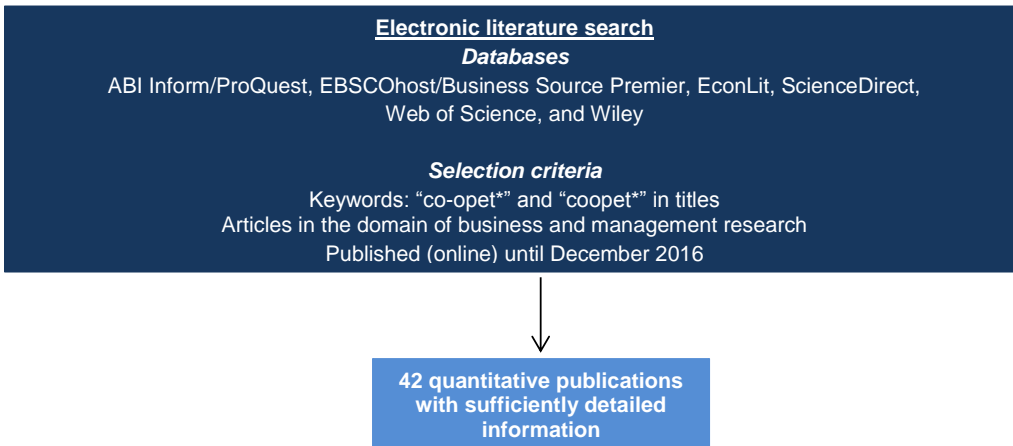
To identify coopetition research for the meta-analysis, a keyword search was performed as presented in Figure 4. Six electronic databases were scanned for academic business and management articles, omitting books and book chapters (Ordanini et al., 2008). This search resulted in a collection of 342 contributions, including nine book reviews, five mixed methods, 95 conceptual, 104 qualitative, and 121 quantitative studies. The remaining eight articles were not available as full papers.

Two authors (the author of this dissertation as well as one co-author of the publication) independently assessed the 121 quantitative studies with respect to the scope of this

research. In total, 42 articles presented sufficiently detailed information to be included in the meta-analysis. The two authors coded sequentially basic and coopetition-specific categories, effect sizes, and several measures to ensure the objectivity of the coding procedure. All discrepancies in the coding were resolved by discussion. Since the vast majority of the identified effect sizes were correlations, the 579 usable effect sizes, which represented a cumulative sample of 337,623 respondents (325,073 firm representatives) were treated as correlations (following Hunter & Schmidt, 2004). When target studies did not include a correlation matrix of all (latent) variables, the respective author(s) were contacted. If correlations could still not be retrieved after contacting the author(s), the standardised beta coefficients were used as proxies, applying the correction proposed by Peterson & Brown (2005), or the effect was omitted. Only 14.5 percent (n=84) of the present effect sizes had to be extracted applying this method.

The sample included studies published between 2002 and 2017. Since coopetition literature is growing but still emerging, no complex approaches to meta-analysis requiring substantial numbers of effects were possible. Therefore, the simple approach of Hunter & Schmidt (2004) was applied while three main additions were implemented. First, as most of the variables are latent variables, the reliability coefficient, Cronbach's alpha, was coded and the attenuation was corrected by measurement error in effect sizes. Second, the file drawer approach, presented by Rosenthal (1979), was used to provide an estimate of stability. Third, the more robust confidence intervals, instead of p-values, were applied to assess the effect sizes' significance (Cumming, 2013).

Figure 4. Systematic research approach Publication 2



3.2.3 Bibliometric citation analysis

Method description

The starting point of citation analysis techniques dates back to 1961 when the Science Citation Index was introduced and citation analysis has become a widely-applied method (MacRoberts & MacRoberts, 1989). This quantitative-oriented bibliographic approach seeks to provide insights into the historical development of scientific fields (Prévot et al., 2010) and is based upon two key assumptions: citations (1) are an effective and reliable indication of scientific interaction between studies, (2) make conceptual linkages of scientific ideas visible (Garfield, 1979). This analysis identifies the most influential contributions based on citations' frequency, which serves as an indicator of significance and qualitative value (Moed, 2005). Frequently cited publications represent a major groundwork for research (Yue & Wilson, 2004) as they reveal important scientific insights.

Although the citation analysis method sparked academic attention in the English-language realm (Roth & Gmür, 2006), such analyses are still rare in business and management studies. Research topics that have already been explored using this method include management (Gundolf & Filser, 2013), marketing (Hubbard et al., 2010), or entrepreneurship (Dos Santos et al., 2011).

Publication 5 uses a bibliometric citation analysis combined with a systematic literature review to identify past research on family firm innovation. In doing so, the evolution path and scientific foundation of research in this field are portrayed.

Data collection and analysis: Publication 5

The bibliometric citation analysis required a comprehensive literature search and was based on the same sample of scientific peer-reviewed journal articles as the systematic literature review. Both research methods were combined to show the bigger picture of past and present research in this field. Figure 3 depicts the process of identifying peer-reviewed academic publications as the basis for both the citation analysis and systematic literature review in Publication 5. After this search process, all identified publications were manually checked for relevance based on research focus, findings, and link to the particular topic. The final dataset included 67 publications and 4,421 citations.

The network analysis software Touchgraph was utilised to perform the analysis and identify the 20 most frequently cited publications and authors, the number of citations, and the most cited journals. A focus on the top 20 most cited publications was chosen as it allows for clarity, compactness, and overall practicality. To identify topical clusters, each of the top 20 most frequently cited publications was scanned multiple times with respect to study subject, research questions, and main findings of each author to find contextual similarities and differences and to assign it to a cluster. In the end, the authors' individual examinations were compared, and after debating the differences, a consensus was reached on the contents of each cluster based on majority voting.

3.2.4 Case study research

Method description

Qualitative case study research is a widely accepted approach (Eisenhardt, 1989) for building new theory and exploring novel phenomena (Yin, 2009). This method enables researchers to gain an in-depth understanding of a particular phenomenon by looking at it in detail in a constrained context (Yin, 2009). Because it represents a “strategy that focuses on understanding the dynamics present in a single environment” (Eisenhardt, 1989, p. 534), researchers acquire insights into the dynamics present within various different groups of people, organisation(s) or process(es), which then can be predicted, evaluated, and understood (Woodside, 2010).

Publication 3 presents a longitudinal case study of coopetition in the French wine sector. Since coopetition is a complex and dynamic strategy and the sequence of the events of the analysed partnership was important, the longitudinal case study method seemed particularly suited (Yin, 2009; Eisenhardt, 1989; Bresser & Harl, 1986) as it enables to investigate and interpret change over time (McLeod & Thomson, 2012). Publication 4 applies the multiple case study approach to further develop the knowledge on coopetition between young SMEs and larger, older, more established corporations in Austria. Publication 6 uses the single case study method to advance the present understanding of coopetition by exploring its application in family SMEs operating in the innovation-intensive German IT industry.

Data collection and analysis: Publication 3

Following earlier research applying longitudinal case studies (e.g., MacKay & Chia, 2012), primary data was collected over time using semi-structured interviews, while secondary data in the form of archived documents, the decree of production, the status of the association, as well as press articles was compiled to supplement the data. In the first round of data collection, 16 key players (experts, professionals, union members) were interviewed using semi-structured interviews. The interviewed key players helped to identify managers and actors of the coopeting SMEs who were willing to participate in a second data collection phase. Semi-structured interviews were conducted with 45 managers. Data saturation was achieved (Creswell, 2014).

The data was transcribed, and the resulting dataset underwent a preliminary coding process based on a thematic content analysis (Miles & Huberman, 2003) with thematic codes drawn from existing literature and new themes emerging from the data. Based on the rich and diverse nature of the data set, data was triangulated, implying cross verification from two or more sources (Miles & Huberman, 2003).

Data collection and analysis: Publication 4

Data was gathered through guided interviews that included semi-open questions that defined the research field. The interview guideline served as an orientation to make sure

that all relevant topics were covered and focused primarily on motives, benefits, and threats of competition between young SMEs and established corporations.

In total, 35 founders of Austrian start-ups and 35 CEOs or innovation managers of Austrian corporations were interviewed. To increase the comparability of the case studies (Yin, 2009), only young, emerging firms employing not more than 50 employees, operating for less than 5 years in innovative industries (primarily ISIC sections C, J), with headquarters in Austria at the time of the study were invited to participate in the study. Larger corporations were approached when they employed at least 250 employees, achieved a revenue of 50 million Euros or more, and possessed the legal form of a limited liability company, as well as headquarters in Austria. By interviewing both competing partners, the suggestion of Tidström & Rajala (2016) to study competition from the two competitors' perspectives was followed. The interviews were conducted at the firms' premises to gain information on their specific cultures, which was added as observation notes to our data. Extending the interview data, archival data was analysed including press and media reports, presentations as well as firm websites. Moreover, a panel discussion with CEOs and experts of the Austrian academic incubator network "AplusB" was organised to discuss the preliminary findings. Altogether, this set of primary and secondary data ensured that the saturation level was reached and new data no longer yielded additional insights (Creswell, 2014).

The data was transcribed, resulting in more than 1,300 pages of text. Applying the general inductive approach, these transcripts were coded using the software MAXQDA (Thomas, 2006; Miles & Huberman, 2003), which lets topics emerge from texts without creating a prior code system. When a topic emerged from one transcript, the other transcripts were scanned immediately for the same subject and phrases were coded accordingly. Based on this analysis, approximately 2,200 codes were generated. Since the analysed data was based on the original data in German, the results of the analysis and supporting quotes were translated into English with the help of a professional language editor who ensured an exact translation as well as the accuracy of the quotations.

Data collection and analysis: Publication 6

Qualitative data was gathered through semi-structured interviews consisting of semi-open questions, allowing for deviations to follow-up on particular topics (Flick, 2009). The interview guideline focused primarily on the family SMEs' characteristics, their cooperative and competitive behaviour within the network, as well as their motivations, benefits, and success factors.

When contacting all network members, the management of the network pledged full support, ensuring a high response rate. The contacts were all key informants of their respective firm, i.e. CEOs. This guaranteed that the interview partners were real experts in their firms' competition behaviour in the network (Reay & Zhang, 2014). Interviews were scheduled with 11 key informants. In addition, secondary data concerning the history and performance of the business network including brochures, press releases, as well as network and firm websites was accessed. Finally, permission for participation in

one of the network's annual shareholder meetings was granted. This represented a valuable possibility to talk to interview partners, to build up trust and commitment towards the project, as well as to gain insights into the network in general, how the partners cooperated with each other, and the main goals and benefits.

The data was transcribed and analysed using the QSR NVivo, version 11, which is a qualitative computer data analysis program that facilitates the management and categorisation of qualitative material in central 'nodes' and their linkages to each other (Graves & Thomas, 2008). Thematic content analysis was applied following the approach presented by Miles & Huberman (2003). The analysis thus proceeded from broad to key themes that permit the classification of data into ideal types and categories.

3.3 Quality of the Research

Various criteria can be applied to evaluate the quality of academic research. Typically, measures of *reliability*, *validity*, and *generalisability* are believed to serve as good indicators of the quality of the research (Miles & Huberman, 2003). However, such indicators are primarily useful for assessing the quality of quantitative research (Bryman & Bell, 2015) and a different set of criteria has to be applied for the evaluation of qualitative research. In this line, the research quality of the qualitative research in this thesis will be discussed by applying the *trustworthiness* criteria that have been developed to evaluate the quality of qualitative studies. These criteria include the four components of *credibility*, *transferability*, *dependability*, and *conformability* (Lincoln & Guba, 1985).

The *credibility* measure concerns the extent to which the informants' opinions and answers are captured by the data and are represented by its analysis and interpretation. Put differently, this component measures whether the findings make sense from the point of view of the informants (Bryman & Bell, 2015). In this thesis, the credibility of the qualitative research was strengthened in several ways. First, by applying the concept of respondent validation, the results of Publications 3, 4, and 6 were presented to the key informants, managers, or experts in the industries, who verified whether or not the conclusions accurately represented their ideas and opinions. The respondents were able to comment on the findings and propose changes if necessary. Second, all publications underwent review processes, either for publication in scientific journals or acceptance to academic conferences. During these processes, the feedback of other scholars helped to develop the interpretations and conclusions further. Third, the multiple assessor method (Ryan, 1999) was adopted during the data analysis and interpretation steps of the qualitative publications. All involved scholars explored the qualitative data individually before the evaluations were compared and discussed in a group to arrive at a consensual decision. Fourth, data triangulation was employed, meaning that several data types were assessed.

The second component, *transferability*, concerns "the extent to which the findings can be applied to other contexts" (Storbacka, 2011, p. 701). Some of the conclusions of this thesis were derived based on studies that focus on a single industry, such as the wine

industry (Publication 3) or the IT industry (Publication 6). The transferability, and thus generalisability, of these insights may be limited, because industry specificities may have played a role in the strategic actions of the investigated firms. However, the purpose of these publications was not to derive generalisable conclusions, but to provide the first groundwork for further research on coopetition in SMEs and family SMEs. Publication 4 analysed multiple industries, and the results can thus better be applied to different contexts.

Dependability measures the degree to which the researcher provides information concerning the research process, including data collection, analysis, and interpretation to enable other researchers to replicate the study. In all qualitative publications of this thesis, detailed descriptions of the research processes were presented. Although the qualitative data of this thesis, primarily interviews, was lengthy and not appended to the publications, the interviews were all recorded, transcribed, and saved for potential future purposes.

The *conformability* measure refers to the level of objectivity of the research and captures whether or not the study is limited by researcher bias (Miles & Huberman, 2003). This component thus describes the extent to which a clear chain of evidence between the collected data, the obtained results, and the derived conclusion is presented and to what extent this chain can be easily followed and understood by others. In this thesis, conformability was enabled through the inclusion of detailed data excerpts, such as direct quotations by the informants, to provide the readers with evidence for the presented findings and conclusions. Further, the results were compared to similar existing research in the field of family SMEs' innovativeness to determine similarities and differences.

4 Review of the Publications

This chapter presents a review of the individual publications included in this thesis. In particular, the background and objectives, as well as the results and contributions of each publication are summarised. Illustrating the role of the publications in the whole thesis, Table 9 sets out their objectives, main findings, and main contributions to the thesis.

4.1 Publication 1 - Coopetition: A Systematic Review, Synthesis, and Future Research Directions

Background and objectives

The first publication focuses on the sub-questions “*What is the current state-of-the-art research on coopetition? Where can research go from here?*” and offers a fine-grained and multi-faceted overview by synthesising high-quality contributions on coopetition published in top peer-reviewed journals. This study thus presents the current accomplishments in coopetition research and demonstrates gaps to be addressed in the future to advance existing knowledge.

Main results and contributions

The number of scientific publications on coopetition has been growing steadily since 1996, mostly in management and business research. Coopetition has been analysed from different angles by taking into account varying levels of analysis, including inter-firm, intra-firm, individual, and network level, and different industries, with a strong focus on high-tech industries. The synthesis reveals that coopetition can be applied as an advantageous strategy in innovation processes. However, such a strategy entails the difficulties of simultaneously managing cooperation and competition. Therefore, the accompanying benefits and risks are discussed. The benefits include, for instance, exchange mechanisms to share resources, capabilities, and knowledge, cost and risk reduction, increased innovativeness and competitiveness. The main risks refer to (internal) conflicts and tensions between coopetitors, opportunism, (involuntary) knowledge leakage, interdependence, and inflexibility.

Based on these insights, an integrative definition of coopetition is developed as follows: “*Coopetition is a strategic and dynamic process in which economic actors jointly create value through cooperative interaction, while they simultaneously compete to capture part of that value*” (Bouncken et al., 2015a). Additionally, weaknesses of current research and future research directions are pinpointed. In particular, a broader focus on contextual contingencies and coopetition’s implications for innovation are suggested as compelling areas for future studies. This publication contributes to coopetition research by presenting an overview and exploring linkages between existing literature, and critically evaluating what has been studied so far in this research field and what has been left out.

4.2 Publication 2 - Lifting the Veil: Early Effects on Antecedents and Consequences of Coopetition from a Meta-Analysis

Background and objectives

The second publication also addresses Sub-question 1 and presents the first statistical synthesis of previously reported findings in coopetition literature. To the best of the author's knowledge, no meta-analysis had been conducted so far on coopetition.

Main results and contributions

Coopetition has different effects on distinct forms of performance and innovation (see Table 5). It exerts a positive impact on financial performance, whereas non-financial performance decreases when firms are coopeting. Further, cooperation among rivals has an overall positive effect on various innovation types, including product, radical, and incremental innovation. However, prior research has rarely explored the link between coopetition and process innovation, and research is needed to understand this relationship in greater detail. The same holds for the innovativeness variable. With respect to coopetition antecedents, uncertainty associated with changes in markets or technologies was identified as strong driver for coopetition. This suggests that coopetition is a valuable strategy in unstable, dynamic, and continuously changing environments.

Table 5. Overview of the identified coopetition effects in Publication 2

Relationship	k	n	Mean _{ES}	SE _{ES}	LCI _{ES}	UCI _{ES}	Fail-safe N
<i>Consequences of coopetition</i>							
Coopetition on all performances	14	6,944	.098	.062	-.025	.022	437
...on financial performance	4	1,108	.099	.034	.033	.165	11
...on non-financial performance	1	43	-.520	.158	-.830	-.219	-
...on innovation performance	9	5,793	.148	.082	-.013	.308	368
Coopetition on all innovation types	20	14,931	.140	.038	.066	.214	1,983
...on radical innovation	4	3,634	.187	.035	.119	.255	166
...on incremental innovation	4	3,634	.115	.045	.028	.203	73
...on product innovation	6	3,956	.197	.098	.004	.390	344
...on process innovation	2	1,870	.052	.097	-.139	.243	11
...on innovativeness	3	1,837	.041	.097	-.149	.232	0
<i>Antecedences of coopetition</i>							
Knowledge sharing	3	1,260	.109	.031	.048	.169	14
Competition	2	596	.102	.076	-.046	.250	3
Cooperation	0	-	-	-	-	-	-
Absorptive capability	5	10,712	.139	.052	.036	.242	178
Intensity of R&D	3	3,379	.133	.026	.082	.185	16
Uncertainty in market/technology	5	2,087	.273	.088	.101	.445	344
Firm size	8	5,686	.103	.019	.065	.145	128
Firm age	8	4,363	.008	.017	-.026	.042	0
Relationship complexity	4	1,348	.049	.041	-.032	.130	1

Isolated effects meta-analysis as proposed by Hunter and Schmidt (2004). Notes. k: Number of samples, n: cumulative sample size, Mean_{ES}: mean effect size (attenuated), LCI_{ES}: Lower confidence interval of effect size (5%), UCI_{ES}: Upper confidence interval of effect size (5%), Fail-safe N: Number of zero-effect studies to draw another conclusion than the confidence intervals indicate (Rosenthal, 1979)

4.3 Publication 3 - Organisational Innovation and Competition between SMEs: A 61 Tertius Strategies Approach

4.3 Publication 3 - Organisational Innovation and Competition between SMEs: A Tertius Strategies Approach

Background and objectives

Publication 3 investigates the sub-question “*What roles does coopetition play for innovation in SMEs?*” and analyses how coopeating SMEs create innovative inter-organisational relationships and enhance the individual firms’ survival in turbulent environments. To explore how SMEs develop coopetition strategies, the SME managers’ tertius iungens and tertius gaudens roles are explored. While the first role describes a third player who joins as an intermediary between disconnected actors, focusing on cooperation and initiating coopetition, the second role portrays a third player who, focusing on competition, enjoys conflict and manipulation. The two propositions are presented in Table 6.

Table 6. Overview of propositions of Publication 3

Proposition 1
The SME manager instigates the coopetition strategy while trying to play a tertius iungens role among the stakeholder in the industry.
Proposition 2
The SME manager will promote the strategy of the stakeholder group he belongs to by playing the role of the tertius gaudens at the expense of other stakeholders.

Main results and contributions

SMEs engage in coopetition as a particular type of organisational innovation, as it represents an innovative relationship combining competition and cooperation and enables SMEs to survive in turbulent, dynamic environments. In this context, the mobilisation of stakeholders is of crucial importance due to the individual SMEs’ lack of resources and competencies. The gained insights justify the generation of the two propositions.

First, the turbulent environment in the national and international wine industry represents a powerful incentive for SMEs’ participation in coopetition. As a consequence of the associated high risk of failure, the SMEs’ managers adopt the role of the tertius iungens (Proposition 1) and instigate coopetition to cooperate with competitors and other stakeholders in the industry. Through these cooperative ties, SMEs can share and gain access to external resources and knowledge. Subsequently, external, complementary resources and knowledge support the development of technologies and innovations and thus enable the long-term survival of resource- and knowledge-constrained SMEs.

Second, the managers’ tertius gaudens role manifests itself in their promotion of the stakeholder groups’ strategy through their active participation in professional organisations that bears fruit, since they can influence the decision-making in these organisations to their benefit. They can gather strategic information, which is spread to

their coopeitors to benefit from information asymmetries compared to their rivals (Proposition 2). These information advantages can benefit the coopeitors' innovation position and overall competitiveness as they gain access to information, expertise, and know-how concerning changes in, e.g., the external environment or customer preferences much earlier and much more detailed than their rivals. As a consequence, the coopeiting SMEs possess a competitive edge compared to their non-coopeiting competitors.

This publication provides insights into coopeition among SMEs as a type of organisational innovation representing a major model of cooperation in the French wine industry. The findings point out that coopeition plays two roles: it serves as key mechanism to limit SMEs' lack of resources and knowledge as the cooperative ties enable the exchange of resources and knowledge while it also serves as mechanism to access important information, expertise, and know-how that can help the SMEs to outcompete their non-coopeiting competitors by means of an information headstart. This work enriches existing knowledge on coopeition and organisational innovation and points out that SMEs often have no other choice but to coopeite to facilitate long-term survival.

4.4 Publication 4 - David and Goliath: Causes and Effects of Coopeition between Start-ups and Corporates

Background and objectives

Publication 4 analyses the sub-question "What roles does coopeition play for innovation in young SMEs?" and explores whether, why, and how start-ups as a sub-group of SMEs and large, established corporations coopeite with each other. This study seeks to uncover whether and how young firms and competing corporations can benefit from coopeition.

Main results and contributions

Young, emergent SMEs coopeite with corporations to improve sales, growth, and publicity, while corporations want to acquire young firms' technologies and innovation capabilities. Both parties benefit from the mutual creation of more efficient marketing and distribution channels. Additionally, young SMEs obtain access to the established corporations' marketing and sales resources that result in valuable time and cost advantages for them. Corporations take advantage of young firms' high degree of recognition in specific market segments, and capability to develop new, highly innovative products/services.

When coopeiting with large corporations, young SMEs, however, are afraid of being imitated by the coopeitor, whereas the larger firms believe that their lack of willingness to take the risk of closely cooperating with young SMEs represents a hurdle for successful coopeition. Further, given the new firms' missing track records, corporations fear reputation losses if their young, emerging partners fail to achieve the commonly agreed performance.

4.5 Publication 5 - Innovation in Family Firms: Examining the Inventory and Mapping the Path 63

To allow both parties to benefit from their cooperative ties, they typically rely on formal contractual, non-disclosure agreements that lay out explicitly both sides' rights and duties. Discussing the findings from the perspectives of the RBV and DCV, the propositions presented in Table 7 were derived as follows.

This study contributes to the growing competition literature by examining the specific, yet underexplored, case of cooperation between young SMEs and large, established corporations and adds to the discussion of the value of external resources obtained through alliances with external partners such as competitors.

Table 7. Overview of propositions of Publication 4

Proposition 1	
1a: Through cooperation with established corporates, start-ups enlarge their resource base and sales network enabling them to expand the sales of their innovations.	1b: Through cooperation with start-ups, established corporates enlarge their technology and knowledge base capabilities enabling them to improve their innovation capabilities.
Proposition 2	
Cooperation among start-ups and corporates can be seen as a dynamic capability approach which can result in benefits for both cooperating partners as they are able to better sense and shape opportunities, seize opportunities and remain competitive.	

4.5 Publication 5 - Innovation in Family Firms: Examining the Inventory and Mapping the Path

Background and objectives

Publication 5 addresses Sub-question 4a “*What is the current state-of-the-art research on innovation in family firms? Where can research go from here?*” and seeks to advance existing family firm innovation research. Past research is reflected through a bibliometric analysis; present research is disclosed based on a systematic literature review; and weaknesses of existing research are identified to reveal future research avenues.

Main results and contributions

Five contextual clusters represent the foundations of present literature. Research within the *ownership and governance* cluster (1) shows that family ownership/involvement influence family firms' strategic behaviour and performance. In the *structural settings* cluster (2), research focuses on agency relationships, paying attention to the impact of family ties. Studies in the *organisational culture and behaviour* cluster (3) stress the need for defining family firms based on their behaviour, underline families' future vision to keep the firm in family hands, and outline the importance of organisational culture for entrepreneurship in family firms. In the *family firm specific resources* cluster (4), scholars argue that family firms are characterised by “familiness”, a specific bundle of resources stemming from family involvement. In the *innovation and strategy* cluster (5), research

analyses family firms' strategic management and the links between risk-taking, culture, ownership, and innovation.

The present understanding of family firm innovation is analysed based on the framework of Crossan & Apaydin (2010). Analysing *leadership* as the first determinant of innovation, research reveals that family ownership and management have an impact on innovation. Regarding the second innovation determinant, *managerial levers*, research examines family firms' mission, goals, strategies, structures, systems, resource allocation, organisational learning, and organisational culture. Research on family firms' *business processes* seeks to explore the topics of initiation, decision-making, portfolio management, project management, and commercialization. The *environment* was added as fourth innovation determinant, as it plays an essential role for family firm innovation. Regarding the dimensions of innovation, studies dealing with innovation as a process examine the *level, drivers, direction, sources, and locus* within family firms. Research on innovation as an outcome focuses on *form, magnitude, referent, and type* of family firms' innovations.

Comparing both analyses demonstrates directions for the future. Research is needed utilising cross-country samples and qualitative methods. Further, the effects of family members' human capital and leadership behaviour on innovation need more attention. Another research gap concerns the family firms' openness towards external partners, e.g., through cooptation, and its implications for innovation.

4.6 Publication 6 - Cooptation of Small- and Medium-Sized Family Enterprises: Insights from an IT Business Network

Background and objectives

Publication 6 explores Sub-question 4b "*What roles does cooptation play for innovation in family SMEs?*" and is among the first to look at cooptation in family SMEs in the IT industry. The focus lies on this industry as cooptation is of crucial relevance in innovation-intensive, dynamic, and complex fields (Carayannis & Alexander, 1999), especially when industry key players are SMEs (Gnyawali & Park, 2009).

Main results and contributions

Cooptation among family SMEs is characterised as a friendly inter-firm relationship manifesting in respect, trust, fruitful discussions, and friendships. Further, family SMEs' decision to coopt derives from economic motives, e.g., strengthened market positioning and collective bargaining power, market creation and entry, and cost-sharing considerations, as well as inter-personal motives, including the desire to create inter-personal relationships, which lead to trust- and respectful, long-lasting friendships among competitors. The benefits derived from cooptation include the typical advantages of

4.6 Publication 6 - Coopetition of Small- and Medium-Sized Family Enterprises: 65 Insights from an IT Business Network

coopetition, such as financial benefits like cost sharing, improved economic conditions and joint innovation, as well as the access to and transfer of knowledge.

Compared to non-family-owned organisations, the results show that these motivational drivers to engage in coopetition and the benefits from cooperative ties facilitate not only family SMEs’ long-term survival but also their protection of their socio-emotional, non-economic wealth. These two outcomes are of key importance to family-owned organisations because they seek to transfer the firm and the associated SEW from one generation to the next as long as possible.

Further, coopetition is found to be beneficial for SMEs in innovation-intensive industries where the benefits include the creation of cooperative innovation projects that enable the joint development and introduction of innovative product/services. But coopetition comes with pitfalls or threats, too, which primarily concern the partners’ possible opportunistic behaviour which can decrease the value and performance of coopetition. Opportunism can lead to imbalanced relationships which should be a “give-and-take” and not a “one-way” relationship. The developed propositions are presented in Table 9.

The main contribution of this publication lies in the fact that the topics of innovation, family firms, and coopetition are finally explored in one publication for the first time. In doing so, this study responds to earlier calls for extended research on coopetition in a wider context (Gnyawali & Song, 2016).

Table 8. Overview of propositions of Publication 6

Proposition 1			
Competing family SMEs are likely to engage in cooperation-dominant coopetition.			
Proposition 2			
2a: Competing family SMEs tend to engage in coopetition to enter new markets and to increase their existing market and bargaining power as means to secure their long-term survival and SEW.	2b: Competing family SMEs tend to engage in coopetition to strengthen the individual firm’s competitiveness as means to secure their long-term survival and SEW.	2c: Competing family SMEs tend to engage in coopetition to enter personal relationships with competitors as means to secure their long-term survival and SEW.	
Proposition 3			
3a: Competing and simultaneously cooperating family SMEs tend to benefit from an improved potential for long-term survival potential by creating better economic conditions.	3b: Competing and simultaneously cooperating family SMEs tend to benefit from mutually exchanging knowledge and experiences, including those regarding succession strategies.	3c: Competing and simultaneously cooperating family SMEs tend to benefit from joint innovation through common projects.	3d: Competing and simultaneously cooperating family SMEs tend to risk imbalanced relationships when opportunism and knowledge leakage are present.

4.7 Overview of the Publications

Table 9 below illustrates the objectives, main findings, and main contributions to the thesis reported in each publication. The objectives were derived from the research question and sub-questions of the thesis.

Table 9. Summary of the publications and their main contributions to the thesis

Publication	Objective	Main findings (excerpt)	Main contribution to thesis
1: Coopetition: A Systematic Review, Synthesis, and Future Research Directions	Provide a detailed understanding of coopetition by reviewing high-quality contributions published in top peer-reviewed journals.	Coopetition research developed along the lines: scope and development of coopetition research, coopetition as a strategy, management of coopetition. As part of the synthesis, an integrative definition of coopetition is proposed. An elaboration of theoretical and empirical approaches, a focus on contextual contingencies, and implications for innovation represent areas for future research.	Providing a groundwork for further empirical research on coopetition. Synthesising existing knowledge on the development of coopetition research with a special focus on coopetition as a strategy, including coopetition as a strategy in innovation processes, and the management of coopetition, including the possible benefits and risks associated with coopetition.
2: Lifting the Veil: Early Effects on Antecedents and Consequence of Coopetition from a Meta-analysis	Extend the understanding of coopetition antecedents and consequences by conducting the first meta-analysis in this field.	Coopetition is advantageous for different performance and innovation measures: financial performance, radical, incremental, product, and process innovations.	Providing a groundwork for further empirical research on coopetition. Synthesising and testing empirically prior insights regarding previously identified antecedents and consequences of coopetition based on existing quantitative coopetition research.
3: Organisational Innovation and Coopetition between SMEs: A Tertius Strategies Approach	Explore how SME managers develop coopetition strategies that include stakeholders when facing environmental uncertainty.	SMEs engage in coopetition as a particular form of organisational innovation to survive turbulent, dynamic environments. In this context, the mobilisation of stakeholders important due to the SMEs' lack of resources and competencies.	Exploring features of coopetition among SMEs. Explicating that coopetition can serve as mechanism to share resources and knowledge among constrained SMEs and to gain access to information resulting in an information headstart compared to non-coopeting rivals.
4: David and Goliath: Causes and Effects of Coopetition between Start-ups and Corporates	Examine whether, why and how young SMEs and large, established corporations engage in coopetition with each other.	Both resource-constrained young SMEs and corporations engage in coopetition with each other to enlarge their resource bases and technological and innovative capabilities.	Exploring features of coopetition among young SMEs and corporations. Explicating that coopetition with larger, established corporations can serve as mechanism to enlarge the young SMEs' resource base and to improve their ability to sense, shape, and seize market opportunities, as well as to remain competitive.

Table 9. Summary of the publications and their main contributions to the thesis
(continued)

Publication	Objective	Main findings (excerpt)	Main contribution to thesis
5: Innovation in Family Firms: Examining the Inventory and Mapping the Path	Contribute to existing research by reflecting the past, disclosing the present, developing suggestions for future family firm innovation research.	<p>Five topical clusters build a foundation for family firm innovation research: ownership and governance, structural settings, organisational culture and behaviour, resources, innovation, and strategy.</p> <p>Additional research is needed on family members' individual human capital, their leadership, their openness to externals, cross-country comparisons, and their functional integrity.</p>	<p>Providing a groundwork for further empirical research on family SMEs' innovation.</p> <p>Synthesising existing knowledge on family firm innovation with a special focus on the specific character of innovation in family-owned organisations which stems from the influence of the family as well as the interplay of family and firm.</p>
6: Coopetition of Small- and Medium-Sized Family Enterprises: Insights from an IT Business Network	Advance existing knowledge on coopetition by exploring its application in family SMEs operating in the innovation-intensive IT industry.	<p>Coopetition among family SMEs tends to be cooperation-dominated.</p> <p>The decision for and benefits of coopetition facilitate family SMEs' non-economic goal to safeguard their SEW.</p> <p>The creation of binding social ties and the fortification of the firms' long-term orientation in the form of renewal of family bonds are important consequences of cooperative actions.</p>	<p>Exploring features of coopetition among family SMEs.</p> <p>Explicating the nature of coopetition among family SMEs.</p> <p>Pointing out the benefits family SMEs can derive from cooperative ties as coopetition leads to better overall economic conditions, enables exchange possibilities in terms of resources and knowledge, improves the family SMEs' innovation power through joint innovation.</p> <p>Pointing out the risks of opportunism and knowledge leakage associated with coopetition.</p>

5 Conclusion

The main objective of this thesis was to explore how coopetition can boost innovation in resource- and knowledge-constrained SMEs, including the typical, yet different sub-groups of young SMEs and family SMEs. The thesis makes three main contributions.

First, this thesis illustrates that coopetition research is still in an infancy stage as literature is emergent and fragmented. Several open research questions remain unanswered and further research is needed to clarify the specificities of coopetition and its implications. For instance, the thesis demonstrates that research has largely concentrated on coopetition in large MNEs, while SMEs, including young SMEs and family SMEs, received minor attention so far although coopetition has been suggested to be a valuable strategy for these firms given their small, resource- and knowledge- constrained nature. Further, research is needed to explore whether and how coopetition can support innovation.

Second, seeking to fill this void in the literature, the thesis provides first insights into how coopetition can facilitate innovation in firms facing shortages in resources and knowledge. The obtained insights show that cooperative ties with rivals permit SMEs, young SMEs, and family SMEs to access the required but not yet internalised resources, capabilities, and knowledge. As a consequence, cooperating SMEs can complement and enlarge their existing but constrained stock of resources and knowledge which, in turn, can improve their innovation ability and survival potential.

Third, the thesis gives empirical evidence of how family SMEs' long-term survival may be facilitated through coopetition along with the family members' SEW objectives. The results suggest that family SMEs engage in coopetition with the aim to safeguard their continuity and SEW protection since coopetition can serve as a means to benefit from improved economic conditions, resource base, and innovation power. However, the thesis also reveals that coopetition entails both possible benefits, such as shared assets, skills, or technologies and joint innovation, as well as risks, like opportunism and knowledge leakage.

5.1 Answering the Research Questions

The main research question of this thesis was formulated as follows: "*How can coopetition benefit innovation in SMEs?*" In this vein, the thesis' objective was to reveal insights on the relationship between coopetition and innovation in SMEs, including the two typical sub-groups of young SMEs and family SMEs. To achieve this ultimate aim, five sub-questions were posed which guided the six publications.

The first sub-question read: "*What is the current state-of-the-art research on coopetition? Where can research go from here?*" Accordingly, Publication 1 identified the major research avenues and possible future research directions in coopetition literature. Research has emphasised the crucial role coopetition can play in innovation processes stemming from its potential to enable important sharing and creation mechanisms through

which resources, capabilities, and knowledge can be mutually accessed, developed, and integrated into the coopeting firms. Based on the identified open research questions, the gained insights show that future research is needed to focus on contextual contingencies, i.e. coopetition in wider entrepreneurial contexts, and examine the implications of coopetition for innovation. Publication 2 analysed existing studies by investigating the previously explored relationships in a statistically synthesising manner. It was highlighted that, on an aggregate level, coopetition can boost different types of innovations, including product, radical, and incremental innovation, and thereby improve financial performance. These studies represented the building block for the subsequent publications on the link between coopetition and innovation in SMEs, including their typical appearances young SMEs and family SMEs.

The second sub-question read: “*What roles does coopetition play for innovation in SMEs?*” In conclusion, Publication 3 proposed that SMEs are able to develop coopetition as a particular form of organisational innovation when facing turbulent environments. In doing so, they build up innovative inter-firm relationships combining competition and cooperation simultaneously and the SMEs’ managers apply the two different logics of interaction with different goals. Applying the *tertius iungens* logic, i.e., the cooperation logic, SME managers instigate coopetition to develop cooperative ties with competitors and other stakeholders to benefit from resource- and knowledge-exchanges. Hence, coopetition serves as a mechanism to decrease the SMEs’ structural lack of resources and knowledge, thereby increasing their innovation and survival potential. Further, following the *tertius gaudens* logic i.e., the competition logic, SME managers promote proactively the strategy of their stakeholder groups by participating in and therefore influencing the decision-making of professional organisations. Here, coopetition serves as a mechanism to access important information, expertise, and know-how which can provide SMEs with a competitive edge over their non-coopeting rivals who either do not possess this information at all or only at a later stage. These results imply that coopetition matters in terms of the ability to survive competition when competing and cooperating strategies are combined successfully.

The third sub-question was: “*What roles does coopetition play for innovation in young SMEs?*” Publication 4 analysed coopetition between young, small firms as sub-group of SMEs and larger, older, more established corporations. Regarding the roles of coopetition for innovation, it can be concluded that coopetition can have significant implications for both young SMEs and corporations, especially in terms of their innovation capability. Existing research has postulated that coopetition provides access to necessary but missing resources and enables coopetitors to complement and enlarge their resource bases. In support of these insights, the findings here revealed that young SMEs’ access to the corporations’ resources, especially financial and social resources, is of great significance to them as these enable them to further develop their innovative products/services and extend their sales capacities through the existing marketing, sales, and distribution channels of large established firms. As such, coopetition helps young SMEs to enlarge their resource base, improve their abilities to sense, shape, and seize opportunities in the market, and to remain competitive. Further, through competitive ties, corporations tap into

young SMEs' technological and innovation capabilities as well as their developed and marketable innovations.

Sub-question 4a read "*What is the current state-of-the-art research on innovation in family firms? Where can research go from here?*" and was motivated by the finding that extant research on innovation in family firms had produced mixed conceptual and empirical findings (De Massis et al., 2013; Liang et al., 2013). In Publication 5, family involvement in ownership, management, and governance was emphasised as being an influential factor for family firm innovation. Furthermore, this study illustrated that future research should be extended by focusing on the implications of family members' individual human capital and leadership as well as the firms' openness to partnerships with external parties like competitors to improve their innovation power.

The final sub-question (4b) read "*What roles does coopetition play for innovation in family SMEs?*" and was addressed in Publication 6 by qualitatively analysing coopetition among German family SMEs that operate in the innovation-intensive IT industry. The findings were in line with prior research suggesting that coopetition can help small firms to survive in competitive environments like the innovation-intensive IT industry (Ratzmann et al., 2016; Bouncken & Fredrich, 2012). In the studied family SMEs, some additional characteristics of a coopetitive relationships could be identified which may stem from the involvement of the owning family in ownership, management, and governance. Based on the findings, it is summarised that the coopetitive ties were cooperation-dominated due to the owning families' preference for harmony. Moreover, the drivers for and benefits of coopetition facilitated the family SMEs' socioemotional goal to safeguard the status quo of their SEW and the future of their firm. Regarding the role of coopetition for innovation, the insights showed that coopeting family SMEs can benefit from joint innovation through the development of common projects. In conclusion, the results provided evidence for the suggestion that family SMEs owners should be aware of the potential benefits of coopetition, as it can facilitate the creation of long-term relationships, strengthen social ties and enable information and resource exchange among the partners, particularly with regard to innovation. However, they also need to consider the possible risks associated with coopetition, which can hamper the creation of fruitful relationships.

The insights gained from these six publications constitute the groundwork for answering the main research question: "*How can coopetition benefit innovation in SMEs?*" In summary, the results lend support for the proposition that coopetition is a crucial source of resources, capabilities, and knowledge and therefore valuable for innovation in different types of SMEs, including young SMEs and family SMEs, as well as MNEs. As such, coopetition seems to be an escape route for various firm types that are confronted with severe limitations in resources, capabilities, and knowledge. Coopetitive partnerships can provide these firms with access to a wider set of highly relevant, valuable and complementary financial, human and social resources, information sharing channels, and technological opportunities that can have a positive impact on the firms' innovation capability and overall chance to survive competition.

5.2 Theoretical Implications

The theoretical contribution of this thesis is twofold: contributions are made to the coopetition literature by taking into consideration contextual contingencies, and to the family firm innovation literature in the examination of innovation and the role of SEW objectives. In the following sections, the theoretical implications are discussed with respect to each literature stream.

5.2.1 Contributions to coopetition literature

This study presents theoretical and empirical contributions to coopetition research by synthesising conceptually (Publication 1) and statistically (Publication 2) the current state-of-the-art research in this field. Further, by investigating the relationship between coopetition and innovation in the understudied context of SMEs (Publication 3), including young SMEs (Publication 4) and family SMEs (Publication 6), this thesis contributes to the emerging thinking that coopetition can be particularly beneficial for resource- and knowledge-constrained firms (e.g., Bouncken & Kraus, 2013; Gnyawali & Park, 2009; Tidström, 2009; Quintana-Garcia & Benavides-Velasco, 2004; Levy et al., 2003). In doing so, this thesis reacts to recent calls for additional research to explore coopetition on different levels and in different contexts (e.g., Bengtsson & Kock, 2014).

The number of research efforts dedicated to the exploration of coopetition has consistently been growing in the last decades, but existing literature remained scattered, fragmented and limited. At this stage of research, this thesis responded to the need for a fine-grained analysis of the conceptualisation and operationalisation of the coopetition concept. As such, it presented one of the first systematic literature reviews of high-quality peer-reviewed publications in this field. As a result, the thesis is able to present a broad and multi-faceted view of coopetition and to facilitate further research and practice in this domain. Moreover, the first meta-analysis on coopetition is included, which presented the first statistical synthesis of existing empirical coopetition research and pinpointed the crucial role of coopetition for innovation.

Furthermore, this thesis unlocks the black box regarding coopetition in different types of SMEs, and its importance for innovation, which represents an issue that has not yet been addressed in detail in existing coopetition literature. Publication 3 adds on the existing insights on coopetition in general, the associated mechanisms of resource- and knowledge transfers (e.g., Estrada et al., 2016; Le Roy & Czakon, 2016; Enberg, 2012; Bengtsson & Kock, 2000), and the roles of coopetition for innovation in resource-constrained firms (e.g., Gnyawali & Park, 2009; Quintana-Garcia & Benavides-Velasco, 2004) by presenting and discussing the findings of a case study of coopeting SMEs in the French wine industry. This work shows that coopetition represents an important strategy for SMEs facing a dynamic environment as well as shortages in resources and knowledge since cooperative ties can enable sharing mechanisms among the competitors through which resources, capabilities, and knowledge can be transferred.

For young SMEs operating in innovative industries, Publication 4 highlights a similar importance of coopeition as resource- and knowledge-exchanging mechanism. This insight contributes to the emerging research stream on coopeition in young firms (e.g., Lechner et al., 2016; Morris et al., 2007; Quintana-Garcia & Benavides-Velasco, 2004; Lechner & Dowling, 2003) which investigates, among others, the ability of coopeition to minimise the typical problems of young SMEs (Lechner & Dowling, 2003), which include their liability of smallness and liability of newness (Morris et al., 2007). In addition to existing research, the results of Publication 4 reveal that coopeition helps not only to enlarge the young SMEs' resource base but also to develop the coopeitors' dynamic capabilities to sense, shape, and seize opportunities in order to remain competitive.

For family SMEs, Publication 6 also points out that such exchange possibilities represent crucial benefits, together with the advantages of better economic conditions and joint innovation. These benefits are coupled with the risks of opportunism and knowledge leakage, highlighting the double-edged consequences of coopeition. While these benefits and risks of coopeition are not entirely new and have been presented already in different settings (e.g., Bengtsson & Johansson, 2014; Bouncken & Kraus, 2013; Pellegrin-Boucher et al., 2013; Gnyawali & Park, 2009), Publication 6 specifically highlights that family SMEs engage in cooperation with competitors to improve their potential of long-term survival and safeguard their SEW protection, which are both of key importance to family firms (Gómez-Mejía et al., 2007).

By examining the mechanisms through which SMEs, young SMEs, and family SMEs are motivated to engage in and benefit from coopeition, the thesis revealed that coopeition can represent an important strategy when firms suffer from shortages in resources, capabilities, or knowledge. The comparison of the investigated SME contexts shows that, in general, coopeition's role as mechanism to share and transfer resources, capabilities, and knowledge tends to be important in all examined types of SMEs, including young SMEs and family SMEs. As they often face the liability of smallness which manifests in shortages in resources and knowledge, coopeition can be an escape route for these firms enabling them to enlarge their access to key resources and knowledge owned by their competitors which then, in turn, can improve the coopeitors' innovation capability.

Through the analysis of coopeition in the two typical SME sub-groups young SMEs and family SMEs, the role of coopeition is explored by taking into account additional firm characteristics, including the young SMEs' young age and the family SMEs' traditional family involvement in ownership, management, and governance of the firm. Given the young SMEs' young age, they use coopeition with large, established firms to gain primarily access to marketing and sales resources which support the market introduction of their in-house developed innovations. In family SMEs, family ownership - the distinguishing characteristic of family firms - is found to affect the family SMEs' engagement in coopeition as their decision to create coopeitive ties is driven by their long-term orientation, which comes with their goal to keep the firm up and running over

generations, and their desire to maintain the status quo of their socioemotional, non-economic wealth.

Further, the roles of cooptation are analysed in different industries, including the wine sector in Publication 3, innovative industries in Publication 4, in particular, ISIC sections C (manufacturing) and J (information and communication), and the IT industry in Publication 6. These sectors have been chosen to investigate cooptation and its roles for innovation in diverse contexts in which cooptation has already been reported as key strategy (Dana et al., 2013; Gnyawali & Park, 2009; Carayannis & Alexander, 1999). The results of the thesis contribute to existing insights in the sense that cooptation is found to be an important means for SMEs supporting their innovativeness and competitiveness in these industries. While in the wine industry cooptation seems to mainly play an important role for an increased survival and competition potential, cooptation helps to develop an improved innovation capability in industries in which innovation is of high relevance.

Hence, although cooptation plays a comparable role as resource- and knowledge-sharing mechanism in these different types of SMEs, the typical firm characteristics of young SMEs and family SMEs, i.e. their young age and their family influence respectively, should not be neglected. This thesis and the individual publications represent a significant building block for further investigation of cooptation in different firm types. As such, the obtained results suggest that an understanding should be developed of how cooptation can be applied successfully in a wider context of entrepreneurship.

5.2.2 Contributions to family firm innovation literature

This thesis contributes to the emerging research on family firm innovation in presenting an overview of past and present research achievements (Publication 5) as well as developing an understanding of the importance of cooptative ties for resource- and knowledge-constrained family SMEs operating in innovation-intensive industries (Publication 6).

Despite increasing scholarly interest in family firm innovation, there have been mixed and inconsistent findings regarding, for example, the effect of family influence in ownership, management, or governance on family firm innovativeness. This thesis makes a contribution to family firm innovation research as it takes a broad look at existing research accomplishments in this domain and evaluates systematically what has been studied and what has been left out. This thesis thus represents a groundwork for future research investigating family SMEs' innovation behaviour and capability.

Moreover, this thesis generates new insights into how family involvement and the associated SEW goals affect business processes, including cooptation strategies. Therefore, the thesis contributes to the growing literature focusing on the SEW perspective of family firms. In doing so, this thesis reacts to recent calls for more extensive research on the relevance of socioemotional objectives on business strategies in family SMEs. The results indicate that families' socioemotional objectives have an

impact on their decision to enter cooperative inter-firm relationships with their competitors and how they behave when cooperating.

5.3 Managerial Implications

Apart from the theoretical implications, the findings of this thesis also offer practical guidelines for founders and managers of SMEs, young SMEs, and family SMEs. These implications will be discussed by proposing some key recommendations based on the arguments and results of this thesis.

1. Perceive competition as part of the firms' business strategies that serves as a source of innovation by facilitating access to a greater set of resources, capabilities, knowledge, and technological opportunities, as well as cost- and risk-sharing possibilities.

First, this thesis illuminates that co-competition is not just a phenomenon in MNEs. Rather, this thesis' findings advocate that different types of SMEs including young SMEs and family SMEs, should perceive co-competition as part of their overall set of possible business strategies. The study argues that co-competition can improve and facilitate the exchange of information, knowledge, resources, and capabilities between firms, which can lead to greater access to complementary resources, capabilities, knowledge, and technological opportunities, as well as cost- and risk-sharing opportunities.

Further, co-competition may be useful to achieve better performance, stronger innovativeness, and overall higher competitiveness. In fact, choosing the right competitor for cooperation can be a crucial escape route for resource-constrained, less innovative firms.

2. Understand competition as a "double-edged sword" since it comes along with both potential benefits and risks.

Second, the thesis underlines the nature of co-competition as a "double-edged sword" as the publications illustrated that co-competition can be a beneficial yet risky strategy for different firm types. While significant benefits may include exchange mechanisms for sharing resources and knowledge; reducing costs and risks; and increasing innovativeness and competitiveness, the risks of opportunism, knowledge leakage, and (too) strong interdependencies should not be neglected.

These dangers can impede the positive effect of cooptation by creating imbalanced relationships between the coopting partners. Hence, although the benefits of cooptation may be tempting, the risks must be considered, because they may harm cooptitors in the long run. As such, firm owners and managers are recommended to carefully explore all possible benefits and risks before forming cooperative ties with competitors.

3. Understand that the families' influence in family SMEs' ownership, management and/or governance can have significant repercussions for the firms' innovation activities through family members' SEW objectives.

Third, this thesis illustrates that business managers in family firms, whether they are internal or external to the family, are encouraged to acknowledge and understand the potential influence of firm-owning families on the firms' strategies. Because they typically tend to be involved in ownership, management, and governance, managers in family SMEs should carefully think about how family influence can determine the firms' business practices and strategies such as, for instance, their cooptation decision. They need to understand how the characteristics of family SMEs influence the management and organisation of innovation.

In this line, it is worth noting that the best practices which are often reported in business or innovation management studies and textbooks should not be taken for granted when managing family SMEs, as those practices have to meet the special characteristics of family-owned firms and thus have to be revised according to this unique context. Further, managers in family firms and family SMEs must recognise and learn how to manage the families' objectives, including their SEW goals.

5.4 Limitations

When interpreting the findings of this thesis, some limiting factors should be acknowledged. First, the systematic literature reviews (Publications 1 and 5), the citation analysis (Publication 5), as well as the meta-analysis (Publication 2) included in this thesis could be disapproved for not taking into account all significant contributions on the respective research topics. Therefore, a comprehensive and rigorous selection procedure guided the systematic data collection and facilitated the development of a literature sample representing as completely as possible the existing knowledge and important thoughts regarding cooptation and family firm innovation. Thus, the likelihood of having ignored important work that would have strongly changed the key insights and conclusions is limited.

Nevertheless, it should not be ignored that the literature sample of the systematic review in Publication 1, the systematic literature review on cooptation, was not aimed to be representative in general but to enable a synthesis of cooptation research published in

highly ranked academic journals. As such, the sample was obtained by applying a quality threshold in the data collection process through which only peer-reviewed journal articles published in journals ranked at least at level “C” in at least one of the three top journal rankings were kept in the sample. This approach can be criticised since this process may have excluded research on cooptation that contributed to the growing recognition of the field over the last two decades but has not been published in highly ranked journals. Given the young and emerging nature of cooptation research, several important contributions may have been presented during special conference tracks or workshops, and have been published in edited books (Bengtsson & Raza-Ullah, 2016) or lower ranked journals which then paved the way for cooptation research being published over time in more established and higher ranked journals. As such, excluding articles published in lower ranked journals from the literature sample constrains the validity and informative value of the literature review and should be acknowledged when interpreting the results of Publication 1.

Relatedly, the literature sample of publication 2 was limited in the sense that only those quantitative contributions could be included in the meta-analysis which presented sufficiently detailed information on the respective sample(s), method(s), and empirical result(s). However, to maximise the number of included articles, author(s) were contacted when some of this information was missing.

Fourth, the objectivity of the literature analyses presented in the systematic reviews should be discussed. When conducting literature reviews, the data identification, the choice of the main themes, as well as the interpretation of the findings are led by the researchers’ subjective assessments. Other scholars might have analysed and interpreted the literature base differently, according to their individual and subjective understanding. To deal with the issue of lacking objectivity, the multiple assessor method (Ryan, 1999) was applied and teams of researchers were involved in the different steps of the literature reviews. The team members individually read and assessed the literature base before discussing the assessments and finding agreement in the group.

A fifth limitation concerns the bibliometric citation analysis method. This limitation stems from the assumption that “references cited by an author are a roughly indicator of influence on his work” (Cole & Cole, 1972, p. 369). The reliability of citations as influence indicators of scientific work has been openly doubted by critics of this method and protagonists defended their method by recognising the possible problems associated with this type of analysis (MacRoberts & MacRoberts, 1989; Cole & Cole, 1974). Problems which should not be neglected when conducting citation analyses and interpreting their results include, for instance, formal influences that are not cited, biased citing, self-citing, different citation types, citation rate variations, and technical limitations of citation analyses (MacRoberts & MacRoberts, 1989). It should be noted that not all problems are equally severe for all kind of research fields or theories (MacRoberts & MacRoberts, 1989).

Accordingly, when analysing the development of the literature on family firm innovation in Publication 5, attention has been paid to restricting especially the technical limitation of the analysis with a focus on synonyms, clerical errors, and coverage of the literature. To acknowledge synonyms and to enlarge the coverage of the identified literature, literature was identified based on several different but related research items in a number of databases. Additionally, the manual input of the data into the required excel sheet allowed to check the data on persistency and to minimise citation or spelling errors.

Sixth, another limitation refers to the set of applied research methods. Although Publication 2 tests and verifies existing findings on antecedents and consequences of cooptation by means of a meta-analysis, i.e. a statistical synthesis, the publications on cooptation in SMEs, young SMEs, and family SMEs rely on qualitative case studies (Publications 3, 4, and 6 respectively). Although these publications' findings represent additional valuable insights into the nature of cooptation among different resource- and knowledge-constrained firms, quantitative research would be needed to provide deeper insights into the identified relationships.

Seventh, empirical data was collected in the French, Austrian, and German markets (Publications 3, 4, 6 respectively). This thesis thus focused primarily on European countries and Western cultures. Since strategic decisions like innovation are influenced by cultural factors (Hayton et al., 2002), the conclusions derived from these samples may not apply in the same way to firms operating in other cultural or national environments such as the American or Asian markets.

Finally, a similar limitation concerns the studied industries since the empirical publications focusing on cooptation followed a rather limited approach. These publications analysed the wine sector (Publication 3), innovative industries (Publication 4), in particular, ISIC sections C (manufacturing) and J (information and communication), and the IT industry (Publication 6). Therefore, the derived results may not hold true to the same extent in other industries. For instance, the conclusions drawn in Publications 4 and 6 may be specific to knowledge-intensive industries in which firms tend to rely on innovation. Given the dynamic nature of this industry, the short product life cycles of many high-tech innovations and the crucial relevance of novel technologies, firms operating in these industries may be practically obliged to share information, knowledge and resources with their competitors through cooperative agreements. Hence, for these firms, cooptation may be even more important than for firms in other industries. Regarding the French wine industry analysed in Publication 3, it should be noted that the particularly turbulent environment and the high risk of failure in this industry probably served as an impetus for the SMEs' engagement in cooptation. In light of the economic crisis, cooperative partnerships with rivals represented an inevitable strategy to many SMEs in this sector. As a consequence, these industry backgrounds should be kept in mind when attempting to apply the insights to other industry environments.

5.5 Suggestions for Future Research

This thesis sought to assess whether and how coopetition can be beneficial for innovation in SMEs. Although the conceptual and empirical findings deepen the understanding of the implications of coopetition for SMEs' innovation, they also offer multiple avenues for future research.

Innovation is becoming increasingly critical for the economic success of different firm types. Hence, research is needed that exposes effective instruments to promote innovation. Coopetition has frequently been suggested as a major source of innovation due to the facilitated exchange of resources and knowledge. In the particular settings of SMEs, including young SMEs and family SMEs, however, prior research has not been detailed enough to determine the role of coopetition in innovation. This study systematically reviewed existing coopetition research and provided insights into the coopetition and innovation relationship in different SME settings.

Future studies could take the presented findings on coopetition as a building block to further develop the understanding of the implications of coopetition for innovation in different settings. Although this thesis presented valuable insights on coopetition in SMEs, it could be beneficial to further develop the understanding of the differences in coopetition in these distinct contexts by means of additional qualitative and quantitative work. As such, the nature of coopetition among young SMEs or the potential influence of firm-owning families on larger family firms' decision to coopete are potential areas of study. In the former setting, it could be valuable to analyse the impact of the founders' personal characteristics and preferences on the start-up's coopetitive behaviours, because founders are said to influence their firms' strategies. In the latter case, it could be interesting to examine whether these organisations' different command and governance structures and their limited involvement of family members result in a different coopetition pattern. Also, a stronger focus could be put on the potential risk associated with coopetition and how this can be mitigated through things like governance mechanisms. Finally, research could explore the effect of coopetition on different types of innovation, such as open innovation or social innovation. The following research questions represent an impetus for future studies:

- *How can young SMEs coopete with each other?*
- *How do the characteristics and preferences of start-up founders influence their firms' coopetition behaviour? Which personal capabilities do these founders need to be able to manage cooperative and competitive ties simultaneously? Which leadership styles facilitate coopetition in this context?*
- *How does family involvement in ownership, management, and governance influence the strategic decision to engage in coopetition in the setting of larger family firms? Which personal capabilities do these founders need to be able to manage cooperative and competitive ties simultaneously? Which leadership styles facilitate coopetition in this context?*

- *What are the dangers of coopetition for SMEs, young SMEs, and family SMEs? How can they be counteracted through governance mechanisms?*
- *What are the implications of coopetition for different types of innovation, including product and process, radical and incremental, open, and social innovation? How can coopetition be beneficial in these contexts? Moreover, which risks need to be taken into account?*

Furthermore, findings on the innovation of family SMEs have been ambiguous and contradictory (De Massis et al., 2013), however, the effect of the family members' involvement in ownership, management, and governance on innovation has rarely been doubted. This study has reviewed existing research on family firm innovation and presented findings on the relationships between the firm-owning families' non-economic, socioemotional goals and the family SMEs' readiness for innovation.

Further studies could build upon these findings by analysing similar relationships in different contexts. First, this thesis has studied family SMEs, completely neglecting their larger counterparts, even though they may behave differently. In conducting similar studies with samples of large family firms, the differences in behaviour between small, medium, and large family-led organisations can be explored. Second, scholars could examine these relationships in different geographical and cultural contexts. Since innovation may be bound to cultural influences (Hayton et al., 2002), national and cultural contingencies are likely to be of significance. Third, Publications 3, 4 and 6 examined coopetition in the Austrian innovative industries, French wine industry and the German IT industry respectively. It can thus be expected that industry specificities partly influenced the findings. It would be interesting to see whether or not similar results can be found in different industries. Future studies should also extend the work on SEW and its implications for the innovativeness of family SMEs and larger family firms. When possible, future research should consider the individual as well as combined impact of SEW dimensions on innovation to discover the potentially different effects of the single SEW components. As such, the following research questions could be applied:

- *How can large family firms improve their innovativeness through SEW and coopetition? Are there any differences between family SMEs and their larger counterparts?*
- *How do national and cultural contingencies influence the relationship between family SMEs' and larger family firms' innovativeness, SEW, and coopetition? How do industry effects influence the relationship between family SMEs' and larger family firms' innovativeness, SEW, and coopetition?*
- *How does the effect of the single SEW dimensions on innovativeness differ compared to the aggregated SEW effect? How can family SMEs counteract the potential negative effects of some SEW dimensions on innovation?*

References

- Adams, J. H., Khoja, F. M. & Kauffman, R. (2012). An empirical study of buyer–supplier relationships within small business organizations. *Journal of Small Business Management*, 50(1), 20-40.
- Afuah, A. (2000). How much do your co-opetitors' capabilities matter in the face of technological change? *Strategic Management Journal*, 21(3), 397-404.
- Akdoğan, A. & Cingöz, A. (2012). An empirical study on determining the attitudes of small and medium sized businesses (SMEs) related to coopetition. *Procedia-Social and Behavioral Sciences*, 58, 252-258.
- Aldrich, H. E. & Auster, E. (1986). Even dwarfs started small: Liabilities of size and age and their strategic implication. *Research in Organizational Behavior*, 8, 65-198.
- Amit, R. & Schoemaker, P. (1993). Strategic assets and organizational rent. *Strategic Management Journal*, 14(1), 33-46.
- Anderson, K. (2004), *The world's wine markets: globalization at works*. Northampton: Edward Elgar Publishing.
- Ardichvili, A., Page, V. & Wentling, T. (2003). Motivation and barriers to participation in virtual knowledge-sharing communities of practice. *Journal of Knowledge Management*, 7(1), 64-77.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120.
- Baruch, Y. & Lin, C. (2012). All for one, one for all: Coopetition and virtual team performance. *Technological Forecasting and Social Change*, 79(6), 1155-1168.
- Baum, J. A., Calabrese, T. & Silverman, B. S. (2000). Don't go it alone: Alliance network composition and startups' performance in Canadian biotechnology. *Strategic Management Journal*, 21(3), 267-294.
- Baumard, P. (2009). An asymmetric perspective on coopetitive strategies. *International Journal of Entrepreneurship and Small Business*, 8(1), 6-22.
- Bay, L. (2016). Daimler, BMW to Merge Car-Sharing Firms. *Handelsblatt GLOBAL*. Düsseldorf: Dieter von Holtzbrinck Media Group.
- Bengtsson, M., Eriksson, J. & Wincent, J. (2010). Co-opetition dynamics: An outline for further inquiry. *Competitiveness Review*, 20(2), 194-214.
- Bengtsson, M. & Johansson, M. (2014). Managing Coopetition to create opportunities for small firms. *International Small Business Journal*, 32(4), 401-407.
- Bengtsson, M. & Kock, S. (1999). Cooperation and competition in relationships between competitors in business networks. *Journal of Business and Industrial Marketing*, 14(3), 178-194.
- Bengtsson, M. & Kock, S. (2000). "Coopetition" in business networks: To cooperate and compete simultaneously. *Industrial Marketing Management*, 29(5), 411-426.
- Bengtsson, M. & Kock, S. (2014). Coopetition-Quo vadis? Past accomplishments and future challenges. *Industrial Marketing Management*, 43(2), 180-188.
- Bengtsson, M. & Raza-Ullah, T. (2016). A systematic review of research on coopetition: Toward a multilevel understanding. *Industrial Marketing Management*, 57, 23-39.

- Bengtsson, M., Raza-Ullah, T. & Vanyushyn, V. (2016). The coopetition paradox and tension: The moderating role of coopetition capability. *Industrial Marketing Management*, 53(1), 19-30.
- Berman, N. G. & Parker, R. A. (2002). Meta-analysis: neither quick nor easy. *BMC Medical Research Methodology*, 2(1), 1-10.
- Berrone, P., Cruz, C. & Gómez-Mejía, L. R. (2012). Socioemotional wealth in family firms theoretical dimensions, assessment approaches, and agenda for future research. *Family Business Review*, 25(3), 258-279.
- Berrone, P., Cruz, C., Gómez-Mejía, L. R. & Larraza-Kintana, M. (2010). Socioemotional wealth and corporate responses to institutional pressures: Do family-controlled firms pollute less? *Administrative Science Quarterly*, 55(1), 82-113.
- Bhidé, A. V. (2003), *The origin and evolution of new businesses*. Oxford: Oxford University Press.
- Bnp Paribas. (2016). *LogMote: turning smartphones into single keys* [Online]. BNP Paribas. Available: <https://group.bnpparibas/en/news/logmote-turning-smartphones-single-key> [Accessed 05/03 2017].
- Bonel, E. & Rocco, E. (2007). Coopeting to Survive; Surviving Coopetition. *International Studies of Management and Organization*, 37(2), 70-96.
- Bougrain, F. & Haudeville, B. (2002). Innovation, collaboration and SMEs internal research capacities. *Research Policy*, 31(5), 735-747
- Bouncken, R., Clauß, T. & Fredrich, V. (2016). Product innovation through coopetition in alliances: Singular or plural governance? *Industrial Marketing Management*, 53(1), 77-90.
- Bouncken, R. & Fredrich, V. (2012). Coopetition: Performance Implications and Management Antecedents. *International Journal of Innovation Management*, 16(5), 1-12.
- Bouncken, R., Fredrich, V., Ritala, P. & Kraus, S. (2017). Coopetition in new product development alliances: Advantages and tensions for incremental and radical innovation *British Journal of Management*, forthcoming.
- Bouncken, R., Gast, J., Kraus, S. & Bogers, M. (2015a). Coopetition: A review, synthesis, and future research directions. *Review of Managerial Science*, 9(3), 577-601.
- Bouncken, R. & Kraus, S. (2013). Innovation in knowledge-intensive industries: The double-edged sword of coopetition. *Journal of Business Research*, 66(10), 2060-2070.
- Bouncken, R., Pesch, R. & Kraus, S. (2015b). SME innovativeness in buyer-seller alliances: effects of entry timing strategies and inter-organizational learning. *Review of Managerial Science*, 9(2), 361-384.
- Brandenburger, A. & Nalebuff, B. (1996), *Co-opetition*. New York: Doubleday Publishing.
- Bresser, R. K. & Harl, J. E. (1986). Collective strategy: vice or virtue? *Academy of Management Review*, 11(2), 408-427.
- Brolos, A. (2009). Innovative coopetition: The strength of strong ties. *International Journal of Entrepreneurship and Small Business*, 8(1), 110-134.

- Bryman, A. & Bell, E. (2015), *Business research methods*. Oxford: Oxford University Press.
- Burström, T. (2012). Understanding PMs' activities in a coopetitive interorganizational multi-project setting. *International Journal of Managing Projects in Business*, 5(1), 27-50.
- Burt, R. S. (1992), *Structural holes, the social structure of competition*. Cambridge: Harvard University Press.
- Camison-Zornoza, C., Lapedra-Alcami, R., Segarra-Ciprés, M. & Boronat-Navarro, M. (2004). A Meta-analysis of Innovation and Organizational Size. *Organization Studies*, 25(3), 331-361.
- Carayannis, E. & Alexander, J. (1999). The wealth of knowledge: Converting intellectual property to intellectual capital in co-opetitive research and technology management settings. *International Journal of Technology Management*, 18(3), 326-352.
- Carayannopoulos, S. (2009). How Technology-Based New Firms Leverage Newness and Smallness to Commercialize Disruptive Technologies. *Entrepreneurship Theory and Practice*, 33(2), 419-438.
- Cassiman, B., Di Guardo, M. & Valentini, G. (2009). Organising R&D projects to profit from innovation: Insights from co-opetition. *Long Range Planning*, 42(2), 216-233.
- Cefis, E. & Marsili, O. (2006). Survivor: the role of innovations in firms' survival. *Research Policy*, 35(5), 626-641.
- Cesinger, B., Fink, M., Madsen, T. & Kraus, S. (2012). Rapidly internationalizing ventures: How definitions can bridge the gap across contexts. *Management Decision*, 50(10), 1816-1842.
- Cesinger, B., Hughes, M., Mensching, H., Bouncken, R., Fredrich, V. & Kraus, S. (2016). A socioemotional wealth perspective on how collaboration intensity, trust, and international market knowledge affect family firms' multinationality. *Journal of World Business*, 51(4), 586-599.
- Cherington, P. T. (1913), *Advertising as a business force: A compilation of experience records*. New York: Doubleday Publishing.
- Chin, K., Chan, B. & Lam, P. (2008). Identifying and prioritizing critical success factors for coopetition strategy. *Industrial Management and Data Systems*, 108(4), 437-454.
- Chrisman, J. J., Chua, J., De Massis, A., Minola, T. & Vismara, S. (2016). Management processes and strategy execution in family firms: from "what" to "how". *Small Business Economics*, 47(3), 719-734.
- Chrisman, J. J., Chua, J. H., Pearson, A. W. & Barnett, T. (2012). Family involvement, family influence, and family-centered non-economic goals in small firms. *Entrepreneurship Theory and practice*, 36(2), 267-293.
- Chrisman, J. J., Fang, H., Kotlar, J. & De Massis, A. (2015). A note on family influence and the adoption of discontinuous technologies in family firms. *Journal of Product Innovation Management*, 32(3), 384-388.

- Chrisman, J. J. & Patel, P. C. (2012). Variations in R&D investments of family and nonfamily firms: Behavioral agency and myopic loss aversion perspectives. *Academy of Management Journal*, 55(4), 976-997.
- Chua, J. H., Chrisman, J. J. & Sharma, P. (1999). Defining the Family Business by Behaviour. *Entrepreneurship Theory and Practice*, 23(4), 19-39.
- Chung, J. E. (2012). When and how does supplier opportunism matter for small retailers' channel relationships with the suppliers? *Journal of Small Business Management*, 50(3), 389-407.
- Classen, N., Carree, M., Van Gils, A. & Peters, B. (2014). Innovation in family and non-family SMEs: an exploratory analysis. *Small Business Economics*, 42(3), 595-609.
- Classen, N., Van Gils, A., Bammens, Y. & Carree, M. (2012). Accessing Resources from Innovation Partners: The Search Breadth of Family SMEs. *Journal of Small Business Management*, 50(2), 191-215.
- Cohen, W. M. & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35(1), 128-152.
- Cole, J. R. & Cole, S. (1972). The ortega hypothesis. *Science*, 178(4059), 368-375.
- Cole, J. R. & Cole, S. (1974). Citation analysis. *Science*, 183(4120), 31-32.
- Colombo, M. G., Grilli, L., Murtinu, S., Piscitello, L. & Piva, E. (2009). Effects of international R&D alliances on performance of high-tech start-ups: A longitudinal analysis. *Strategic Entrepreneurship Journal*, 3(4), 346-368.
- Connelly, B. L., Certo, S. T., Ireland, R. D. & Reutzel, C. R. (2011). Signaling theory: A review and assessment. *Journal of Management*, 37(1), 39-67.
- Cooper, R. G. (2000). New product performance: what distinguishes the star products. *Australian Journal of Management*, 25(1), 17-45.
- Courrent, J.-M. & Gundolf, K. (2009). Proximity and Micro-Enterprise Manager's Ethics: A French Empirical Study of Responsible Business Attitudes. *Journal of Business Ethics*, 88(4), 749-762.
- Covin, J. G., Eggers, F., Kraus, S., Cheng, C.-F. & Chang, M.-L. (2016). Marketing-related resources and radical innovativeness in family and non-family firms: A configurational approach. *Journal of Business Research*, 69(12), 5620-5327.
- Creswell, J. W. (2007), *Qualitative inquiry and research design: Choosing among five approaches*. Thousand Oaks: Sage Publications Inc.
- Creswell, J. W. (2014), *Research design: Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks: Sage Publications Inc.
- Crossan, M. M. & Apaydin, M. (2010). A Multi-Dimensional Framework of Organizational Innovation: A Systematic Review of the Literature. *Journal of Management Studies*, 47(6), 1154-1191.
- Cumming, G. (2013), *Understanding the new statistics: Effect sizes, confidence intervals, and meta-analysis*. New York: Routledge.
- Czakov, W. (2009). Power asymmetries, flexibility and the propensity to cooperate: An empirical investigation of SMEs' relationships with franchisors. *International Journal of Entrepreneurship and Small Business*, 8(1), 44-60.

- Czakon, W., Mucha-Kus, K. & Rogalski, M. (2014). Coopetition research landscape-A systematic literature review 1997-2010. *Journal of Economics & Management*, 17, 121.
- Czernek, K. & Czakon, W. (2016). Trust-building processes in tourist coopetition: The case of a Polish region. *Tourism Management*, 52, 380-394.
- Dahl, J. (2014). Conceptualizing coopetition as a process: An outline of change in cooperative and competitive interactions. *Industrial Marketing Management*, 43(2), 272-279.
- Dana, L., Granata, J., Lasch, F. & Carnaby, A. (2013). The evolution of co-opetition in the Waipara wine cluster of New Zealand. *Wine Economics and Policy*, 2(1), 42-49.
- De Massis, A., Audretsch, D., Uhlaner, L. & Kammerlander, N. (2017). Innovation with Limited Resources: Management Lessons from the German Mittelstand. *Journal of Product Innovation Management*, forthcoming.
- De Massis, A., Frattini, F. & Lichtenthaler, U. (2013). Research on Technological Innovation in Family Firms: Present Debates and Future Directions. *Family Business Review*, 26(1), 10-31.
- De Massis, A., Frattini, F., Pizzurno, E. & Cassia, L. (2015). Product innovation in family versus nonfamily firms: An exploratory analysis. *Journal of Small Business Management*, 53(1), 1-36.
- De Rond, M. & Bouchikhi, H. (2004). On the dialectics of strategic alliances. *Organization Science*, 15(1), 56-69.
- Dewar, R. D. & Dutton, J. E. (1986). The adoption of radical and incremental innovations: An empirical analysis. *Management Science*, 32(11), 1422-1433.
- Dibrell, C., Davis, P. S. & Craig, J. (2008). Fueling innovation through information technology in SMEs. *Journal of Small Business Management*, 46(2), 203-218.
- Donckels, R. & Fröhlich, E. (1991). Are Family Businesses Really Different? European Experiences from STRATOS. *Family Business Review*, 4(2), 149-160.
- Dorn, S., Schweiger, B. & Albers, S. (2016). Levels, phases and themes of coopetition: A systematic literature review and research agenda. *European Management Journal*, 34(5), 484-500.
- Dos Santos, B., Holsapple, C. & Ye, Q. (2011). The intellectual influence of entrepreneurship journals: A network analysis. *Entrepreneurship Theory and Practice*, 35(4), 735-754.
- Dowling, M., Lechner, C. & Bau, F. (1998). Kooperative Wettbewerbsbeziehungen: Eine empirische Untersuchung. *Die Betriebswirtschaft*, 58(1), 86-102.
- Dyer, W. G. J. (2006). Examining the “family effect” on firm performance. *Family Business Review*, 19(4), 253-273.
- Eggers, F., Kraus, S. & Covin, J. G. (2014). Traveling into unexplored territory: radical innovativeness and the role of networking, customers, and technologically turbulent environments. *Industrial Marketing Management*, 43(8), 1385-1393.
- Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of Management Review*, 14(4), 532-550.

- Eisenhardt, K. M. & Graebner, M. E. (2007). Theory building from cases: Opportunities and challenges. *Academy of Management Journal*, 50(1), 25-32.
- Ejsmont, A. (2014). Coopetition as the Factor of Increasing Level of Innovativeness in the SME Sector in Poland. *Oeconomia Copernicana*, 5(4), 45-60.
- Enberg, C. (2012). Enabling knowledge integration in coopetitive R&D projects: The management of conflicting logics. *International Journal of Project Management*, 30(7), 771-780.
- Estrada, I., Faems, D. & De Faria, P. (2016). Coopetition and product innovation performance: The role of internal knowledge sharing mechanisms and formal knowledge protection mechanisms. *Industrial Marketing Management*, 53(1), 56-65.
- European Commission (2005), *The new SME definition: User guide and model declaration*. European Commission, Publication Office.
- Falk, M. (2017). Gains from horizontal collaboration among ski areas. *Tourism Management*, 60, 92-104.
- Fernandez, A.-S. & Chiambaretto, P. (2016). Managing tensions related to information in coopetition. *Industrial Marketing Management*, 53(1), 66-76.
- Fernandez, A.-S., Le Roy, F. & Gnyawali, D. R. (2014). Sources and management of tension in co-opetition case evidence from telecommunications satellites manufacturing in Europe. *Industrial Marketing Management*, 43(2), 222-235.
- Flatten, T. C., Greve, G. I. & Brettel, M. (2011). Absorptive capacity and firm performance in SMEs: The mediating influence of strategic alliances. *European Management Review*, 8(3), 137-152.
- Flick, U. (2009), *Qualitative Sozialforschung - Eine Einführung*. Rheinbek bei Hamburg: Rowohlt.
- Franco, M. & Haase, H. (2013). Firm resources and entrepreneurial orientation as determinants for collaborative entrepreneurship. *Management Decision*, 51(3), 680-696.
- Freel, M. S. (2000). Barriers to Product Innovation in Small Manufacturing Firms. *International Small Business Journal*, 18(2), 60-80.
- Freel, M. S. (2003). Sectoral patterns of small firm innovation, networking and proximity. *Research Policy*, 32(5), 751-770.
- Freeman, J. & Engel, J. S. (2007). Models of innovation: Startups and mature corporations. *California Management Review*, 50(1), 94-119.
- Gans, J. S. & Stern, S. (2003). The product market and the market for "ideas": commercialization strategies for technology entrepreneurs. *Research Policy*, 32(2), 333-350.
- Garfield, E. (1979). Is Citation Analysis a Legitimate Evaluation Tool? *Scientometrics*, 1(4), 359-375.
- Garriga, E. (2009). Cooperation in stakeholder networks: firms' "Tertius Iungens" role. *Journal of Business Ethics*, 90(4), 623-637.
- Gast, J., Filser, M., Gundolf, K. & Kraus, S. (2015). Coopetition research: Towards a better understanding of past trends and future directions. *International Journal of Entrepreneurship and Small Business*, 24(4), 492-521.

- Glass, G. V. (1976). Primary, secondary, and meta-analysis of research. *Educational Researcher*, 5(10), 3-8.
- Gnyawali, D. R. & Park, B. (2009). Co-opetition and technological innovation in small and medium-sized enterprises: A multilevel conceptual model. *Journal of Small Business Management*, 47(3), 308-330.
- Gnyawali, D. R. & Park, B. (2011). Co-opetition between giants: Collaboration with competitors for technological innovation. *Research Policy*, 40(5), 650-663.
- Gnyawali, D. R. & Song, Y. (2016). Pursuit of rigor in research: Illustration from co-competition literature. *Industrial Marketing Management*, 57(1), 12-22.
- Gómez-Mejía, L. R., Haynes, K., Nunez-Nickel, M., Jacobson, K. J. L. & Moyano-Fuentes, J. (2007). Socioemotional wealth and business risks in family-controlled firms: Evidence from Spanish olive oil mills. *Administrative Science Quarterly*, 52(1), 106-137.
- Granata, J. (2013). The multiplication of co-competitive strategies in south of France wine industry. *7th Academy of Wine Business Research International Conference*. St. Catherines, Canada.
- Granata, J., Géraudel, M., Gundolf, K., Gast, J. & Marques, P. (2016). Organizational Innovation and Co-competition between SMEs: A Tertius Strategies Approach. *International Journal of Technology Management*, 71(1/2), 81.
- Graves, C. & Thomas, J. (2008). Determinants of the Internationalization Pathways of Family Firms: An Examination of Family Influence. *Family Business Review*, 21(2), 151-167.
- Gulati, R. & Sytch, M. (2007). Dependence asymmetry and joint dependence in interorganizational relationships: Effects of embeddedness on a manufacturer's performance in procurement relationships. *Administrative Science Quarterly*, 52(1), 32-69.
- Gundolf, K. & Filser, M. (2013). Management research and religion: A citation analysis. *Journal of Business Ethics*, 112(1), 177-185.
- Hamel, G. (1991). Competition for competence and inter-partner learning within international strategic alliances. *Strategic Management Journal*, 12, 83-103.
- Harms, R., Reschke, C. H., Kraus, S. & Fink, M. (2010). Antecedents to Innovation and Growth: Analyzing the Impact of Entrepreneurial Orientation and Goal-oriented Management. *International Journal of Technology Management*, 52(1/2), 135-152.
- Hayton, J. C., George, G. & Zahra, S. A. (2002). National Culture and Entrepreneurship: A Review of Behavioral Research. *Entrepreneurship Theory and Practice*, 26(4), 33-62.
- Hayton, J. C. & Kelley, D. J. (2006). A competency-based framework for promoting corporate entrepreneurship. *Human Resource Management*, 45(3), 407-427.
- Helpman, E. (1993). Innovation, imitation, and intellectual property rights. *Econometrica*, 61(6), 1247-1280.
- Heunks, F. J. (1998). Innovation, creativity and success. *Small Business Economics*, 10(3), 263-272.

- Hewitt-Dundas, N. (2006). Resource and Capability Constraints to Innovation in Small and Large Plants. *Small Business Economics*, 26(3), 257-277.
- Hogenhuis, B. N., Van Den Hende, E. A. & Hultink, E. J. (2016). When Should Large Firms Collaborate with Young Ventures? Understanding young firms' strengths can help firms make the right decisions around asymmetric collaborations. *Research-Technology Management*, 59(1), 39-47.
- Hubbard, R., Norman, A. & Parsa, R. (2010). Marketing's "Oscars": A citation analysis of award-winning articles. *Marketing Intelligence and Planning*, 28(5), 669-684.
- Hult, G. T. M., Hurley, R. F. & Knight, G. A. (2004). Innovativeness: Its antecedents and impact on business performance. *Industrial Marketing Management*, 33(5), 429-438.
- Hung, S.-W. & Chang, C.-C. (2012). A co-opetition perspective of technology alliance governance modes. *Technology Analysis and Strategic Management*, 24(7), 679-696.
- Hunter, J. & Schmidt, F. (2004), *Methods of meta-analysis: correcting error and bias in research findings*. Los Angeles: Sage Publications Inc.
- Kammerlander, N. & Ganter, M. (2015). An Attention-Based View of Family Firm Adaptation to Discontinuous Technological Change: Exploring the Role of Family CEOs' Noneconomic Goals. *Journal of Product Innovation Management*, 32(3), 361-383.
- Katila, R., Rosenberger, J. & Eisenhardt, K. (2008). Swimming with sharks: Technology ventures, defense mechanisms and corporate relationships. *Administrative Science Quarterly*, 53(2), 295-332.
- Ketchen, D., Ireland, R. D. & Snow, C. (2007). Strategic entrepreneurship, collaborative innovation, and wealth creation. *Strategic Entrepreneurship Journal*, 1(4), 371-385.
- Kim, J. & Parkhe, A. (2009). Competing and cooperating similarity in global strategic alliances: an exploratory examination. *British Journal of Management*, 20(3), 363-376.
- Kim, Y.-J. & Vonortas, N. S. (2014). Cooperation in the formative years: Evidence from small enterprises in Europe. *European Management Journal*, 32(5), 795-805.
- Kirzner, I. M. (1978), *Wettbewerb und Unternehmertum*. Tübingen: Mohr Siebeck.
- Kock, S., Nisuls, J. & Söderqvist, A. (2010). Co-opetition: A source of international opportunities in Finnish SMEs. *Competitiveness Review*, 20(2), 111-125.
- Kollmann, T., Hensellek, S. & Kensbock, J. (2016). *European Startup Monitor 2016* [Online]. Germany.
- Kossyva, D., Sarri, K. & Georgopoulos, N. (2014). Coopetition: A Business Strategy for SMEs in Times of Economic Crisis. *South-Eastern Europe Journal of Economics*, 1, 89-106.
- Kraus, S. (2007), Strategic Planning in New Ventures and Young SMEs. In Wankel, C. (Ed.) *21st Century Management - A Reference Handbook* (73-81). Thousand Oaks: Sage Publications Inc.

- Kraus, S. & Kauranen, I. (2009). Strategic Management and Entrepreneurship: Friends or Foes? *International Journal of Business Science and Applied Management*, 4(1), 37-50.
- Kyrgidou, L. P. & Spyropoulou, S. (2013). Drivers and Performance Outcomes of Innovativeness: An Empirical Study. *British Journal of Management*, 24(3), 281–298.
- Lasagni, A. (2012). How can external relationships enhance innovation in SMEs? New evidence for Europe. *Journal of Small Business Management*, 50(2), 310-339.
- Le Roy, F. & Czakon, W. (2016). Managing coepetition: the missing link between strategy and performance. *Industrial Marketing Management*, 53(1), 3-6.
- Le Roy, F. & Fernandez, A. S. (2015). Managing Coopetitive Tensions at the Working-group Level: The Rise of the Coopetitive Project Team. *British Journal of Management*, 26(4), 671-688.
- Le Roy, F., Robert, M. & Lasch, F. (2016). Choosing the best partner for product innovation: Talking to the enemy or to a friend? *International Studies of Management and Organization*, 46(2-3), 136-158.
- Lechner, C. & Dowling, M. (2003). Firms networks: external relationships as sources for the growth and competitiveness of entrepreneurial firms. *Entrepreneurship & Regional Development*, 15, 1-26.
- Lechner, C., Soppe, B. & Dowling, M. (2016). Vertical coepetition and the sales growth of young and small firms. *Journal of Small Business Management*, 54(1), 67-84.
- Leiponen, A. & Helfat, C. E. (2010). Innovation objectives, knowledge sources, and the benefits of breadth. *Strategic Management Journal*, 31(2), 224-236.
- Levy, M., Loebbecke, C. & Powell, P. (2003). SMEs, co-opetition and knowledge sharing: The role of information systems. *European Journal of Information Systems*, 12(1), 3-17.
- Li, Z. & Daspit, J. J. (2016). Understanding family firm innovation heterogeneity: a typology of family governance and socioemotional wealth intentions. *Journal of Family Business Management*, 6(2), 103-121.
- Liang, Q., Li, X., Yang, X., Lin, D. & Zheng, D. (2013). How does family involvement affect innovation in China? *Asia Pacific Journal of Management*, 30(3), 677-695.
- Lincoln, Y. S. & Guba, E. G. (1985), *Naturalistic inquiry*. Newbury Park: Sage Publications Inc.
- Luger, M. I. & Koo, J. (2005). Defining and tracking business start-ups. *Small Business Economics*, 24(1), 17-28.
- Luo, X., Rindfleisch, A. & Tse, D. K. (2007). Working with rivals: The impact of competitor alliances on financial performance. *Journal of Marketing Research*, 44(1), 73-83.
- Luo, Y. (2007). A coepetition perspective of global competition. *Journal of World Business*, 42(2), 129-144.
- Mackay, R. & Chia, R. (2012). Choice, Chance, and Unintended Consequences in Strategic Change: A Process Understanding of the Rise and Eall of Northco Automotive. *Academy of Management Journal*, 56(1), 208-230.

- Macroberts, M. H. & Macroberts, B. R. (1989). Problems of citation analysis: A critical review. *Journal of the American Society for information Science*, 40(5), 342-349.
- Madrid-Guijarro, A., Garcia, D. & Van Auken, H. (2009). Barriers to innovation among Spanish manufacturing SMEs. *Journal of Small Business Management*, 47(4), 465-488.
- Mantena, R. & Saha, R. (2012). Co-opetition between differentiated platforms in two-sided markets. *Journal of Management Information Systems*, 29(2), 109-140.
- Marion, T. J. & Friar, J. H. (2012). Managing global outsourcing to enhance lean innovation. *Research-Technology Management*, 55(5), 44-50.
- McLeod, J. & Thomson, R. (2012), Qualitative longitudinal research. In Goodwin, J. (Ed.) *SAGE Biographical Research: Starting Points, Debates and Approaches* (319-342). Thousand Oaks: Sage Publications Inc.
- Miles, M. B. & Huberman, A. M. (2003), *Qualitative Data Analysis: An Expanded Sourcebook*. Thousand Oaks: Sage Publications Inc.
- Miller, D., Le Breton-Miller, I. & Scholnick, B. (2008). Stewardship vs. Stagnation: An Empirical Comparison of Small Family and Non-Family Businesses. *Journal of Management Studies*, 45(1), 51-78.
- Moed, H. F. (2005), *Citation Analysis in Research Evaluation*. Dordrecht: Springer.
- Molina-Morales, F. X. & Martínez-Fernández, M. T. (2010). Social networks: effects of social capital on firm innovation. *Journal of Small Business Management*, 48(2), 258-279.
- Morris, M., Koçak, A. & Özer, A. (2007). Coopetition as a small business strategy: Implications for performance. *Journal of Small Business Strategy*, 18(1), 35-55.
- Motohashi, K. (2005). University–industry collaborations in Japan: The role of new technology-based firms in transforming the National Innovation System. *Research Policy*, 34(5), 583-594.
- Muller, P., Devnani, S., Julius, J., Gagliardi, D. & Marzocchi, C. (2016). *Annual Report on European SMEs 2015/2016* [Online]. Brussels: European Commission.
- Nasr, E. S., Kilgour, M. D. & Noori, H. (2015). Strategizing niceness in co-opetition: The case of knowledge exchange in supply chain innovation projects. *European Journal of Operational Research*, 244(3), 845-854.
- Niemelä, T. (2004). Interfirm cooperation capability in the context of networking family firms: The role of power. *Family Business Review*, 17(4), 319-330.
- Nieto, M. J. & Santamaría, L. (2010). Technological collaboration: Bridging the innovation gap between small and large firms. *Journal of Small Business Management*, 48(1), 44-69.
- Obstfeld, D. (2005). Social networks, the Tertius Iungens orientation, and involvement in innovation. *Administrative Science Quarterly*, 50, 100-130.
- Oecd (2005), *Oslo Manual: Guidelines for collecting and interpreting innovation data*. Paris: OECD.
- Onwuegbuzie, A., Collins, K., Leech, N., Dellinger, A. & Jiao, Q. (2010), A meta-framework for conducting mixed research syntheses for stress and coping researchers and beyond. In Collins, K., Onwuegbuzie, A. & Jiao, Q. (Eds.),

- Toward a broader understanding of stress and coping: Mixed methods approaches* (169-211). Charlotte: Information Age.
- Ordanini, A., Rubera, G. & Defillippi, R. (2008). The many moods of inter-organizational imitation: A critical review. *International Journal of Management Reviews*, 10(4), 375-398.
- Osarenkhoe, A. (2010). A co-competition strategy: A study of inter-firm dynamics between competition and cooperation. *Business Strategy Series*, 11(6), 343-362.
- Padula, G. & Dagnino, G. B. (2007). Untangling the rise of co-competition: The intrusion of competition in a cooperative game structure. *International Studies of Management and Organization*, 37(2), 32-52.
- Park, B., Srivastava, M. K. & Gnyawali, D. R. (2014). Walking the tight rope of co-competition: Impact of competition and cooperation intensities and balance on firm innovation performance. *Industrial Marketing Management*, 43(2), 210-221.
- Parra-Requena, G., Ruiz-Ortega, M. J., García-Villaverde, P. M. & Rodrigo-Alarcón, J. (2015). The Mediating Role of Knowledge Acquisition on the Relationship Between External Social Capital and Innovativeness. *European Management Review*, 12(3), 149-169.
- Pellegrin-Boucher, E., Le Roy, F. & Gurău, C. (2013). Co-competitive strategies in the ICT sector: Typology and stability. *Technology Analysis and Strategic Management*, 25(1), 71-89.
- Pereira, D. & Leitão, J. (2016). Absorptive capacity, co-competition and generation of product innovation: contrasting Italian and Portuguese manufacturing firms. *International Journal of Technology Management*, 71(1-2), 10-37.
- Pesämaa, O., Shoham, A., Wincent, J. & Ruvio, A. A. (2013). How a learning orientation affects drivers of innovativeness and performance in service delivery. *Journal of Engineering and Technology Management*, 30(2), 169-187.
- Peterson, R. A. & Brown, S. P. (2005). On the use of beta coefficients in meta-analysis. *Journal of Applied Psychology*, 90(1), 175-181.
- Pittaway, L. & Rose, M. (2006). Learning and relationships in small firms: introduction to the special issue. *International Small Business Journal*, 24(3), 227-231.
- Prévot, F., Branchet, B., Boissin, J.-P., Castagnos, J.-C. & Guieu, G. (2010). The intellectual structure of the competence-based management: a bibliometric analysis. In Sanchez, R., Heene, A. & Zimmermann, T. E. (Eds.), *Research in Competence-Based Management - A Focused Issue on Identifying, Building, and Linking Competences* (231-258). Bingley: Emerald Group Publishing Limited.
- Quintana-Garcia, C. & Benavides-Velasco, C. (2004). Cooperation, competition, and innovative capability: A panel data of European dedicated biotechnology firms. *Technovation*, 24(12), 927-938.
- Ratzmann, M., Gudergan, S. P. & Bouncken, R. (2016). Capturing heterogeneity and PLS-SEM prediction ability: Alliance governance and innovation. *Journal of Business Research*, 69(10), 4593-4603.
- Raza-Ullah, T., Bengtsson, M. & Kock, S. (2014). The co-competition paradox and tension in co-competition at multiple levels. *Industrial Marketing Management*, 43(2), 189-198.

- Reay, T. & Zhang, Z. (2014), Qualitative methods in family business research. In Melin, L., Nordqvist, M. & Sharma, P. (Eds.), *The SAGE Handbook of Family Business* (573-593). Thousand Oaks: Sage Publications Inc.
- Renna, P. & Argoneto, P. (2012). Capacity investment decision in co-opetitive network by information sharing. *Computers and Industrial Engineering*, 62(1), 359-367.
- Rhee, J., Park, T. & Lee, D. H. (2010). Drivers of innovativeness and performance for innovative SMEs in South Korea: Mediation of learning orientation. *Technovation*, 30(1), 65-75.
- Ribeiro-Soriano, D. E., Roig-Tierno, N. & Mas-Tur, A. (2016). Governance models of competition and innovation: the case of Spanish firms. *International Journal of Technology Management*, 71(1-2), 38-57.
- Ricciardi, F., Zardini, A. & Rossignoli, C. (2016). Organizational dynamism and adaptive business model innovation: The triple paradox configuration. *Journal of Business Research*, 69(11), 5487-5493.
- Ritala, P. (2012). Coopetition strategy: When is it successful? Empirical evidence on innovation and market performance. *British Journal of Management*, 23(3), 307-324.
- Ritala, P., Golnam, A. & Wegmann, A. (2014). Coopetition-based business models: The case of Amazon.com. *Industrial Marketing Management*, 43(2), 236-249.
- Ritala, P. & Hurmelinna-Laukkanen, P. (2009). What's in it for me? Creating and appropriating value in innovation-related coopetition. *Technovation*, 29(12), 819-828.
- Ritala, P. & Hurmelinna-Laukkanen, P. (2013). Incremental and radical innovation in coopetition: The role of absorptive capacity and appropriability. *Journal of Product Innovation Management*, 30(1), 154-169.
- Ritala, P., Kraus, S. & Bouncken, R. (2016). Introduction to coopetition and innovation: Contemporary topics and future research opportunities. *International Journal of Technology Management*, 71(1/2), 1-9.
- Ritala, P. & Sainio, L.-M. (2014). Coopetition for radical innovation: Technology, market and business-model perspectives. *Technology Analysis and Strategic Management*, 26(2), 155-169.
- Ritala, P. & Tidström, A. (2014). Untangling the value-creation and value-appropriation elements of coopetition strategy: A longitudinal analysis on the firm and relational levels. *Scandinavian Journal of Management*, 30(4), 498-515.
- Rodan, S. & Galunic, C. (2004). More than network structure: how knowledge heterogeneity influences managerial performance and innovativeness. *Strategic Management Journal*, 25(6), 541-562.
- Rosenbusch, N., Brinckmann, J. & Bausch, A. (2011). Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. *Journal of Business Venturing*, 26(4), 441-457.
- Rosenthal, R. (1979). The file drawer problem and tolerance for null results. *Psychological Bulletin*, 86(3), 638.
- Roth, S. & Gmür, M. (2006). Struktur und Entwicklung der Controllingforschung - Eine Zitations- und Kozitationsanalyse von Controllingbeiträgen in deutschsprachigen

- wissenschaftlichen Zeitschriften von 1970 bis 2003. *Zeitschrift für Betriebswirtschaft*, 76(4), 395-440.
- Roy, P. & Yami, S. (2009). Managing strategic innovation through cooperation. *International Journal of Entrepreneurship and Small Business*, 8(1), 61-73.
- Ryan, G. (1999). Measuring the typicality of text: Using multiple coders for more than just reliability and validity checks. *Human Organizations*, 58(3), 313-322.
- Salavou, H. (2004). The concept of innovativeness: should we need to focus? *European Journal of Innovation Management*, 7(1), 33-44.
- Sammarra, A. & Biggiero, L. (2008). Heterogeneity and Specificity of Inter-Firm Knowledge Flows in Innovation Networks. *Journal of Management Studies*, 45(4), 800-829.
- Schaper, M. & Volery, T. (2004), *Entrepreneurship and small business: A Pacific Rim perspective*. Milton: Wiley.
- Siggelkow, N. (2007). Persuasion with case studies. *Academy of Management Journal*, 50(1), 20.
- Simmel, G. (1950), *The Sociology of Georg Simmel*. New York: Free Press.
- Sirmon, D. & Hitt, M. A. (2003). Managing resources: Linking unique resources, management, and wealth creation in family firms. *Entrepreneurship Theory and Practice*, 27(4), 339-358.
- Smith, H. L., Dickson, K. & Smith, S. L. (1991). "There are two sides to every story": Innovation and collaboration within networks of large and small firms. *Research Policy*, 20(5), 457-468.
- Soppe, B., Lechner, C. & Dowling, M. (2014). Vertical cooperation in entrepreneurial firms: theory and practice. *Journal of Small Business and Enterprise Development*, 21(4), 548-564.
- Spriggs, M., Yu, A., Deeds, D. & Sorenson, R. L. (2013). Too Many Cooks in the Kitchen: Innovative Capacity, Collaborative Network Orientation, and Performance in Small Family Businesses. *Family Business Review*, 26(32), 32-50.
- Stinchcombe, A. L. (1965), Social structure and Organizations. In March, J. G. (Ed.) *Handbook of Organizations* (142-193). Chicago: Rand McNally.
- Storbacka, K. (2011). A solution business model: Capabilities and management practices for integrated solutions. *Industrial Marketing Management*, 40(5), 699-711.
- Street, C. T. & Cameron, A. F. (2007). External relationships and the small business: A review of small business alliance and network research. *Journal of Small Business Management*, 45(2), 239-266.
- Tajeddini, K. (2010). Effect of customer orientation and entrepreneurial orientation on innovativeness: Evidence from the hotel industry in Switzerland. *Tourism Management*, 31(2), 221-231.
- Teece, D. (1986). Profiting from Technological Innovation. *Research Policy*, 15(6), 285-305.
- Teece, D. (1992). Competition, cooperation, and innovation: Organizational arrangements for regimes of rapid technological progress. *Journal of Economic Behavior and Organization*, 18(1), 1-25.

- Teece, D., Pisano, G. & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509-533.
- Thomas, D. R. (2006). A general inductive approach for analyzing qualitative evaluation data. *American Journal of Evaluation*, 27(2), 237-246.
- Thomason, S., Simendinger, E. & Kiernan, D. (2013). Several determinants of successful coopetition in small business. *Journal of Small Business and Entrepreneurship*, 26(1), 15-28.
- Thompson, V. A. (1965). Bureaucracy and innovation. *Administrative Science Quarterly*, 10(1), 1-20.
- Thorpe, R., Holt, R., Macpherson, A. & Pittaway, L. (2005). Using knowledge within small and medium-sized firms: A systematic review of the evidence. *International Journal of Management Reviews*, 7(4), 257-281.
- Tidd, J., Bessant, J. & Pavitt, K. (2001), *Managing innovation: integrating technological, market and organizational change*. Chichester: Wiley.
- Tidström, A. (2008). Perspectives on coopetition on actor and operational levels. *Management Research*, 6(3), 207-217.
- Tidström, A. (2009). The causes of conflict when small-and medium-sized competitors cooperate. *International Journal of Entrepreneurship and Small Business*, 8(1), 74-91.
- Tidström, A. (2014). Managing tensions in coopetition. *Industrial Marketing Management*, 43(2), 261-271.
- Tidström, A. & Rajala, A. (2016). Coopetition strategy as interrelated praxis and practices on multiple levels. *Industrial Marketing Management*, 58(1), 35-44.
- Tomlinson, P. R. & Fai, F. M. (2013). The nature of SME co-operation and innovation: A multi-scalar and multi-dimensional analysis. *International Journal of Production Economics*, 141(1), 316-326.
- Tranfield, D., Denyer, D. & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management*, 14(3), 207-222.
- Tsai, W. (2002). Social structure of “coopetition” within a multiunit organization: Coordination, competition, and intraorganizational knowledge sharing. *Organization Science*, 13(2), 179-190.
- Ucbasaran, D., Westhead, P. & Wright, M. (2008). Opportunity Identification and Pursuit: Does an Entrepreneur’s Human Capital Matter? *Small Business Economics*, 30(2), 153-173.
- Van De Ven, A. H. (1986). Central problems in the management of innovation. *Management Science*, 32(5), 590-607.
- Von Hippel, E. (1987). Cooperation between rivals: Informal know-how trading. *Research Policy*, 16(6), 291-302.
- Voordeckers, W., Van Gils, A. & Van Den Heuvel, J. (2007). Board Composition in Small and Medium-Sized Family Firms. *Journal of Small Business Management*, 45(1), 137-156.
- Walley, K. (2007). Coopetition. *International Studies of Management and Organization*, 37(2), 11-31.

- Walsh, S. & Linton, J. D. (2002). The measurement of technical competencies. *Journal of High Technology Management Research*, 13(1), 63-86.
- Weiblen, T. & Chesbrough, H. W. (2015). Engaging with startups to enhance corporate innovation. *California Management Review*, 57(2), 66-90.
- Werner, A., Gast, J. & Kraus, S. (2014). The effect of working time preferences and fair wage perceptions on entrepreneurial intentions among employees. *Small Business Economics*, 43(1), 137-160.
- Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5(2), 171-180.
- Wiklund, J. (1998), *Small firm growth and performance: entrepreneurship and beyond*. Jönköping: Jönköping International Business School.
- Woodside, A. G. (2010). Bridging the chasm between survey and case study research: Research methods for achieving generalization, accuracy, and complexity. *Industrial Marketing Management*, 39(1), 64-75.
- Wu, J. (2014). Cooperation with competitors and product innovation: Moderating effects of technological capability and alliances with universities. *Industrial Marketing Management*, 43(2), 199-209.
- Yami, S. & Neme, A. (2014). Organizing co-competition for innovation: The case of wireless telecommunication sector in Europe. *Industrial Marketing Management*, 43(2), 250-260.
- Yang, K.-P., Chou, C. & Chiu, Y.-J. (2014). How unlearning affects radical innovation: The dynamics of social capital and slack resources. *Technological Forecasting and Social Change*, 87, 152-163.
- Yin, R. K. (2009), *Case study research: Design and methods*. Thousand Oaks: Sage Publications Inc.
- Yue, W. & Wilson, C. S. (2004). Measuring the citation impact of research journals in clinical neurology: A structural equation modelling analysis. *Scientometrics*, 90(3), 317-332.

Publication I

Bouncken, R., Gast, J., Kraus, S., and Bogers, M.

Coopetition: A Systematic Review, Synthesis, and Future Research Directions

Reprinted with permission from

Review of Managerial Science

Vol. 9, pp. 577-601, 2015

© 2015, Springer

Publication II

Gast, J., Niemand, T., Kraus, S., Bouncken, R., and Ritala, P.

**Lifting the Veil: Early Effects on Antecedents and Consequences of Coopetition
from a Meta-Analysis**

Accepted for

Global Research Symposium on Marketing and Entrepreneurship (GRSME) 2017

Publication III

Granata, J., Géraudel, M., Gundolf, K., Gast, J., and Marques, P.
**Organizational Innovation and Coopetition between SMEs:
A Tertius Strategies Approach**

Reprinted with permission from
International Journal of Technology Management
Vol. 70, pp. 81-99, 2016
© 2016, INDERSCIENCE Publishers

Publication IV

Hora, W., Gast, J., Kailer, N. and Mas-Tur, A.

**David and Goliath: Causes and Effects of Coopetition between
Start-ups and Corporates**

Accepted for
Review of Managerial Science

Publication V

Filser, M., Brem, A., Gast, J., Kraus, S., and Calabro, A.

Innovation in family firms: Examining the inventory and mapping the path

Reprinted with permission from
International Journal of Innovation Management
Vol. 20, pp. 1650054-1650093, 2016
© 2016, World Scientific Publishing Group

Publication VI

Gast, J., Kallmünzer, A., Kraus, S., Gundolf, K., and Arnold, J.
**Coopetition in Small- and Medium-Sized Family Enterprises: Insights from an IT
Business Network**

Reprinted with permission from
International Journal of Entrepreneurship and Small Business
2017 (In press)

© 2017, INDERSCIENCE Publishers

ACTA UNIVERSITATIS LAPPEENRANTAENSIS

708. SHESTAKOVA, MARINA. Ultrasound-assisted electrochemical treatment of wastewaters containing organic pollutants by using novel Ti/Ta₂O₅-SnO₂ electrodes. 2016. Diss.
709. OLEKSIENKO, OLGA. Physico-chemical properties of sol-gel synthesized titanosilicates for the uptake of radionuclides from aqueous solutions. 2016. Diss.
710. PATALA, SAMULI. Advancing sustainability-oriented innovations in industrial markets. 2016. Diss.
711. KUORIKOSKI, TERO. Kohti resonoivaa urheilujohtamista – Tavoitteen muodostuminen urheilun kentässä. 2016. Diss.
712. LAHTELA, VILLE. Improving the properties of solid Scots pine (*Pinus sylvestris*) wood by using modification technology and agents. 2016. Diss.
713. NEVARANTA, NIKO. Online time and frequency domain identification of a resonating mechanical system in electric drives. 2016. Diss.
714. FANG, CHAO. Study on system design and key technologies of case closure welding for ITER correction coil. 2016. Diss.
715. GARCÍA PÉREZ, MANUEL. Modeling the effects of unsteady flow patterns on the fireside ash fouling in tube arrays of kraft and coal-fired boilers.
716. KATTAINEN, JARI. Heterarkkisen verkostoyhteistyön johtamistarpeet verkoston muotoutumisvaiheessa. 2016. Diss.
717. HASAN, MEHDI. Purification of aqueous electrolyte solutions by air-cooled natural freezing. 2016. Diss.
718. KNUTAS, ANTTI. Increasing beneficial interactions in a computer-supported collaborative environment. 2016. Diss.
719. OVASKA, SAMI-SEPPO. Oil and grease barrier properties of converted dispersion-coated paperboards. 2016. Diss.
720. MAROCHKIN, VLADISLAV. Novel solutions for improving solid-state photon detector performance and manufacturing. 2016. Diss.
721. SERMYAGINA, EKATERINA. Modelling of torrefaction and hydrothermal carbonization and heat integration of torrefaction with a CHP plant. 2016. Diss.
722. KOTISALO, KAISA. Assessment of process safety performance in Seveso establishments. 2016. Diss.
723. LAINE, IGOR. Institution-based view of entrepreneurial internationalization. 2016. Diss.
724. MONTECINOS, WERNER EDUARDO JARA. Axial flux permanent magnet machines – development of optimal design strategies. 2016. Diss.
725. MULTAHARJU, SIRPA. Managing sustainability-related risks in supply chains. 2016. Diss.
726. HANNONEN, JANNE. Application of an embedded control system for aging detection of power converter components. 2016. Diss.

727. PARKKILA, JANNE. Connecting video games as a solution for the growing video game markets. 2016. Diss.
728. RINKINEN, SATU. Clusters, innovation systems and ecosystems: Studies on innovation policy's concept evolution and approaches for regional renewal. 2016. Diss.
729. VANADZINA, EVGENIA. Capacity market in Russia: addressing the energy trilemma. 2016. Diss.
730. KUOKKANEN, ANNA. Understanding complex system change for a sustainable food system. 2016. Diss.
731. SAVOLAINEN, JYRKI. Analyzing the profitability of metal mining investments with system dynamic modeling and real option analysis. 2016. Diss.
732. LAMPINEN, MATTI. Development of hydrometallurgical reactor leaching for recovery of zinc and gold. 2016. Diss.
733. SUHOLA, TIMO. Asiakaslähtöisyys ja monialainen yhteistyö oppilashuollossa: oppilashuolto prosessi systeemisenä palvelukokonaisuutena. 2017. Diss.
734. SPODNIAK, PETR. Long-term transmission rights in the Nordic electricity markets: An empirical appraisal of transmission risk management and hedging. 2017. Diss.
735. MONTONEN, JUHO. Integrated hub gear motor for heavy-duty off-road working machines – Interdisciplinary design. 2017. Diss.
736. ALMANASRAH, MOHAMMAD. Hot water extraction and membrane filtration processes in fractionation and recovery of value-added compounds from wood and plant residues. 2017. Diss.
737. TOIVANEN, JENNI. Systematic complaint data analysis in a supply chain network context to recognise the quality targets of welding production. 2017. Diss.
738. PATEL, GITESHKUMAR. Computational fluid dynamics analysis of steam condensation in nuclear power plant applications. 2017. Diss.
739. MATTHEWS, SAMI. Novel process development in post-forming of an extruded wood plastic composite sheet. 2017. Diss.
740. KÄHKÖNEN, TOMMI. Understanding and managing enterprise systems integration. 2017. Diss.
741. YLI-HUUMO, JESSE. The role of technical dept in software development. 2017. Diss.
742. LAYUS, PAVEL. Usability of the submerged arc welding (SAW) process for thick high strength steel plates for Arctic shipbuilding applications. 2017. Diss.
743. KHAN, RAKHSHANDA. The contribution of socially driven businesses and innovations to social sustainability. 2017. Diss.
744. BIBOV, ALEKSANDER. Low-memory filtering for large-scale data assimilation. 2017. Diss.
745. ROTICH, NICOLUS KIBET. Development and application of coupled discrete and continuum models in solid particles classification. 2017. Diss.

