Fostering Collective Creativity in Procurement

A Conceptualization and Application of Team Creativity Climate in Sourcing and Co-innovation Teams

Nadine Kiratli
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DISERTATION
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Doing a PhD – I thought – is like nothing I have done before. Over time, however, I realized that in fact it is a lot like my beloved game of football. It all starts with hard, disciplined training. Daily work on your technique, countless laps on the track to build stamina, and additional shifts in the gym to work that muscle are essential to prepare for matches. And on the pitch, it can get really rough. You will have sore muscles and catch injuries. It will take willpower and determination to get back up again; you will spend long and painful hours in rehab training, only to return to the pitch stronger and better than ever before. Sometimes it is pure passion for the game that keeps you going. And when you leave the pitch as the winner of the match, you will realize that it was all worth it. A PhD is nothing less but a tough ballgame – but luckily you do not play it on your own. After 90 minutes (and full overtime) the whistle blows and it is time to step in front of the microphones, thanking those people who have supported and guided me throughout this journey.

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CHAPTER 1
Introduction

The majority of work in this chapter has been done by the author of this dissertation. Feedback from the promotors and co-promotor was implemented during several revision rounds.

This dissertation is a collection of essays where the author made sure that the amount of duplication is kept at a minimum. But for chapters 2, 3 and, 4 to stand alone, some overlap is necessary.

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CHAPTER 1

PRACTICAL RELEVANCE

Value Creation – A New Role for Procurement!

All over the world, organizations increasingly rely on procurement to deal with the impact of globalization, including supply market volatility, supply chain disruption, and rising costs of raw materials (Accenture 2011). Times could not be better for procurement to prove its worth to the business. Since its establishment as a profession in the early twentieth century (Callender 2007), procurement has undergone a metamorphosis from a shunned, back-office function to a well-recognized, internally integrated business partner. While the voices “belittling purchasing and treating it in a negligent and offhand manner” (Twyford 1915, p.11) occasionally still echo through corporate boardrooms, the majority of business leaders view procurement as a strategic ally for achieving and sustaining a competitive advantage. Today, world-class procurement departments create enterprise value by operating at nearly 20 per cent lower cost (Hacket Group 2016) and by securing profit margins up to 22 per cent higher than their lower performing counterparts (Peterson 2014). Through “steadily climbing the stairs of purchasing maturity” (Van Poucke 2016) and adopting a value-based orientation\(^1\), procurement has outgrown its role as the organizational cost saver. Chief Purchasing Officers (CPOs) and their staff are increasingly accountable for spurring bottom- and top-line growth (Tate 2013). Pressured for continuous bottom-line improvements, buyers must save costs in more compelling, strategic ways including, for instance, working capital expenditure improvements, payment term renegotiations, and reverse-engineering of cost structures (Forbes 2015). In addition, they must drive top-lines through, for instance, growing business with current suppliers, sourcing better quality or creating new streams of revenue through designing and introducing new products or services with suppliers (Accenture 2011).

No Time for ‘Lone Rangers’

Despite their hard-earned reputation as a source of value and competitive advantage (Hartmann, Kerkfeld, and Henke 2012), procurement professionals cannot act in solitude. One reason is that value creating opportunities are highly dispersed within and outside the organization so that a multitude of stakeholders is required to identify and capitalize on them (Chapman, Dempsey, Ramsdell, and Reopel 1997). Another and related reason is that procurement decisions can be complex and multifaceted, pervad-

\(^1\) Value-based procurement denotes the practice of using multiple criteria, such as sustainability, innovativeness, quality and expertise, and not solely price when sourcing suppliers in addition to working closely with suppliers via so-called Supplier Relationship Management (SRM) programs on further improvement of processes and products during contract implementation and beyond. See Dumond (1996) for a more detailed, conceptual discussion of value-based management and an application of the framework to procurement.
INTRODUCTION

ing and affecting the entire organization. Nowadays many strategic sourcing problems are not simply though or persistent, they can be regarded as ‘wicked’\(^2\) (Camillus, 2008). Developing adequate solutions to these problems requires collective efforts, pooling relevant knowledge and expertise within and across organizational boundaries where needed (Fisher and Amabile 2009). Today, at least 70 per cent of companies have installed sourcing teams (State of Flux 2013). In these teams buyers work with colleagues from different business units and/or functional backgrounds to capture value by developing disruptive sourcing strategies. More recently, procurement professionals are invited to participate in co-innovation project teams, identifying and capitalizing on innovation opportunities together with key suppliers (Wagner and Hoegl 2006; Wynstra, Anderson, Narus, and Wouters 2012). According to A.T. Kearney (2014), 90 per cent of leading companies have a structured process, including joint innovation teams, for collaboratively creating value with suppliers. Altogether, CPOs and their procurement staff are better equipped to identify and unlock bottom- and top-line value within their organizations and the supply base than ever before (Accenture 2011).

And yet, many procurement organizations struggle to live up to stakeholders’ heightened expectations accompanying this strategic uplift. According to a recent survey by Deloitte (2016), 62 per cent of CPOs do not believe that their sourcing teams have the skills and capabilities to deliver their procurement strategy and expected outcomes. In addition, fewer organizations benefit from supplier innovation input: 42 per cent in 2011 compared to 35 per cent in 2012 (State of Flux 2012). Even though tapping supplier innovation is a designated procurement objective for 55 per cent of global CPOs (Hackett Group 2016), most procurement organizations still lack the necessary capabilities.

**Collective Creativity – The Key to Sustained Value Creation in Procurement**

In search of an explanation for these deficiencies, recent popular business press and pioneering scholars point to creativity as the key in procurement – or rather the lack thereof (Busch 2013; Giunipero, Denslow, and Eltantawy 2005; Teague 2014). Creativity is oftentimes perceived and glorified as the prerogative of designers, musicians, and writers – individuals with an innate affinity for envisioning and creating the novel. In an attempt to demystify creativity, thus making it accessible to professions outside the creative industry, recent discussions revolve around the properties of creativity. Creativity is commonly defined as the development of novel and useful ideas or solutions that are ready to be put into practice (Amabile 1996). According to this definition, the development of disruptive, effective sourcing strategies and the generation of innovative

\(^2\) According to Rittel and Webber (1973), there are at least ten distinguishing properties of wicked problem (e.g., there is no definitive formulation of a wicked problem, there are no criteria that tell when the or a solution has been found, solutions are not true-or-false but good-or-bad, there is no immediate and no ultimate test of a solution, every solution is a ‘one-shot operation’, every wicked problem is unique).
ideas for commercialization together with suppliers are hence nothing else but acts of creativity. Confronted with only marginally increasing operating budgets and diminishing cost-cutting potential, procurement professionals must think more creatively – with a fresh perceptive, off the beaten procurement paths – to keep offering valuable procurement solutions. A further step towards the de-mystification of creativity is the realization that, contrary to common perceptions people might have of creativity, it is not the ability to create ideas out of nothing (Amabile 1998). Instead, creativity requires the meaningful, novel recombination and application of existing, relevant knowledge to capitalize on an opportunity or solve an underlying problem (Ritter, van Baaren, and Dijksterhuis 2012). As individuals are usually not in possession of all relevant knowledge, creative problem-solving and solution-finding often involve the collaboration of individuals within collectives such as workgroups, taskforces or (cross-functional) teams (Perry-Smith 2006). With most procurement-related work carried out by teams, the ability to think out of the box together with other relevant stakeholders – to be collectively creative – is essential for next generation procurement professionals (Busch 2013; Giunipero et al. 2005; Teague 2014). The short vignettes in the box below (Figure 1.1) illustrate three real-life cases of collective creativity in procurement.

Eventhough leading procurement organizations recognize the merits of collective creativity, a number of obstacles hamper successful execution. First and foremost, the principles of creativity are very different from the transactional and procedure-driven work of professional buyers. Despite generally elevated levels of purchasing maturity, procurement is still a relatively conservative profession with lots of rules and strict procedures to follow (Hardt, Reinecke, and Spiller 2007). In search for truly novel solutions, however, standard purchasing tools and sourcing processes are of little avail. Instead of relying on formal instructions and templates, buyers must learn to adapt these traditional tools and techniques to create new value (Giunipero et al. 2005). Second, many companies still struggle to effectively integrate buyers in cross-functional teams. A lack of engagement with internal stakeholders and their limited understanding of procurement are major challenges (Xchanging 2015). Against this backdrop, this dissertation sets out to develop a theoretical perspective on collective creativity in sourcing and co-innovation teams. Insights from this dissertation will provide procurement professionals with guidance and measures for overcoming current deficiencies, ultimately sustaining their reputation as a source of value and competitive advantage.

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3 In this dissertation, creative problem-solving and solution-finding are used interchangeably.
Example 1: Identifying the Purchasing Need at an Oil & Gas Company
A sourcing team of a global oil & gas player was charged with identifying suppliers that would provide larger vessels to ship water from the mainland to one of the company’s drilling platforms – the water is critical for operating the platform as it is used to cool the drill heads. When working together with several colleagues from Procurement, R&D, and Operations, the team started to scrutinize the actual purchase need in this project. The team realized that the actual need was not larger vessels with bigger tanks to carry more water – but in fact more water. Drawing on the diverse functional expertise of team members, the team quickly checked the potential for drilling a hole to source groundwater. After approval, the team took action to implement the solution, thereby avoiding huge amounts of costs and delivering a quick sourcing solution in-house.

Example 2: Buying Protective Clothing at a Chemicals Company
The corporate sourcing team of a global chemicals company was confronted with the task of buying protective work gear (e.g., helmets, jackets, safety shoes) for their plant workers. Instead of applying the traditional practice of competitive bidding to reduce the number of suppliers and negotiate framework agreements with the few remaining suppliers, the team pursued a more holistic solution by drawing on diverse functional knowledge of the colleagues from Finance and Accounting. By accepting slightly higher prices and selecting best quality suppliers, the team managed to simultaneously negotiate far lower insurance fees for occupational injury of workers with the insurance company. Savings realized from lower insurance fees far exceeded savings that would have otherwise been realized by negotiating lower prices for protective clothing.

Example 3: Creative procurement practices triggers supply chain innovation
Catalysts, substances that cause or accelerate a chemical reaction without itself being affected, are essential for operating refineries and petro-chemical complexes. The corporate sourcing team of a global oil producer was asked to reorganize the enterprise category for catalysts – currently managed on a local level – to improve sourcing effectiveness and secure supply. After some spend and market analysis the team decided to centralize spend at the global level. In a first step, all high level activities for sourcing of catalysts – including associated services, contract management as well as strategic tendering – were placed at the global level to leverage spend. In a second step, the team started to revise the purchasing strategy and standardized the purchasing model by incorporating technology into their contracting and procurement strategy. These changes enabled the company to better identify and have quicker access to latest technology and R&D developments in the market. In the past suppliers had to contact procurement managers on a local level – getting approval for the use of catalysts in different regions was tedious. With the category organized at the global level, it was easier to certify a supplier’s products for use in different regions and applications within the company. The company’s current suppliers were thus more interested in entering into innovation relationships with the oil producer, providing readily access to their valuable knowledge on catalysts. As a result, other suppliers were encouraged to also change their profile and adopt a new, innovation-driven business model. Centralizing spend and employing technology-based procurement thus did not only change the profile of own suppliers and lifted the business with them – creative change of one customer firm triggered a new industry standard.
THEORETICAL CONSIDERATIONS

Extant Research on Teams and Creativity

Increased technology and a more connected marketplace have contributed to the complexity of tasks in the workplace so that individuals cannot be expected to complete them alone. In response to these developments, many organizations have adopted a team approach (Mathieu, Heffner, Goodwin, Salas, and Cannon-Bowers 2000). Teams are popular vehicles for carrying out organizational work “in any situation requiring the real-time combination of multiple skills, experiences, and judgments” (Katzenbach and Smith 2003, p.15). In such cases, multiple individuals simply outperform collection of individuals that operate independently and are confined by job roles or responsibilities. If installed and managed properly teams are the most flexible and the most powerful unit of performance, learning, and change in any organization (Fisher and Amabile 2009; Katzenbach and Smith 2003). As much as working in teams can add real value by combining knowledge and experience to produce creative solutions in a shorter period of time, teams can easily tie up large amounts of financial and human resources. Teams must thus legitimize such investments by delivering adequate returns to them. In other words, teams should prevent gaining a reputation as ‘time wasting talk shops’ in which more people are kept busy with the same problem.

Seminal work of Hackman and Morris (1975) marks the starting point of action-oriented, empirical research for systematically investigating why some groups are more effective than others. In this stream a substantial number of studies focus on creativity as an outcome of teamwork. Contrary to common perceptions about creativity sparking from the genius mind of the solitary thinker, creativity is social in nature, arising from collective knowledge and in interaction between different people (Andersen and Kragh 2013). Creativity, as one of the necessary determinants of innovation (Im et al. 2013), requires the novel and relevant recombination of existing knowledge. Teams are an effective vehicle for pooling relevant knowledge of multiple individuals and igniting creativity. In today’s connected market place, creative ideas and solutions emerge from joint thinking, passionate conversations, and shared struggles – all pointing to the importance of creativity as a collective activity. It follows that, if organizations are to benefit from creativity during co-manufacturing or co-creation initiatives, the most efficient way is to organize and manage creativity at the team level. Further, we need to become cognizant of the factors that drive creativity in this setting. Extant research covers a range of team-related aspects driving and influencing team creativity including, for instance, team composition (Harrison and Klein 2007), contextual factors and member

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4 We adopt Salas et al. (1992, p.4) definition of teams as “a distinguishable set of two or more people who interact, dynamically, interdependently, and adaptively toward a common and valued goal/objective/mission, who have each been assigned specific roles or functions to perform, and who have a limited life-span of membership”.
capabilities (Shalley and Gilson 2004), and the impact of different leadership styles (Sarin and McDermott 2003). While all studies adopt slightly different theoretical viewpoints, follow diverse research designs, and investigate team creativity across different contexts, scholars unanimously agree that making teams perform successfully on creative tasks is not a straightforward endeavor. Unforeseeable group dynamics, apparent conflicts of interest, different viewpoints, and too much heterogeneity in skills all provide potential barriers to effective team functioning. Recognizing the importance of the interaction processes taking place among group members during creative tasks, a substream of research emerged to forge our understanding of behaviour and shared perceptions in teams (Amabile and Pillemer 2012; Baer and Frese 2003).

**Teams in Purchasing and Supply Management Literature**

In Purchasing and Supply Management (PSM) research, scholars’ interest for team-based approaches emerged only in the 1990s. The value of teams in a PSM context is summarized in terms of their potential to create synergies across functions and business units by means of combining multiple skills and knowledge bases (Ellram and Pearson 1993; Van Weele and Rozemeijer 1996). In addition, teams can be assembled temporarily and on an ad-hoc basis allowing members to continue their remaining work responsibilities elsewhere. In their study of the determinants of purchasing team usage, Johnson et al. (2002) emphasize that teams are installed internally as well as externally, including other supply chain stakeholders such as suppliers and sometimes also customers. Trent and Monczka (1998) expected a continued reliance of companies on internally-focused teams (e.g., commodity team, cross-functional sourcing team, purchasing council) to optimize cross-functional performance. Carter et al. (2000) predicted that cross-enterprise teaming would become a key activity whenever communication with other supply chain stakeholders is critical to the company’s performance. Recent studies reveal that team-based work with internal stakeholders and external supply chain partners have become an established approach in procurement (Zheng et al. 2007). Several scholars set out to identify the success factors of effective team functioning (Trent and Monczka 1994), including leadership (Trent 1996), empowered team decision-making (Giunipero and Vogt 1997), and individual member effort and commitment (Trent 1998). Effective team functioning has been associated with increased innovation (Petersen, Handfield, and Ragatz 2005), faster project completion (Monzka et al. 2009), shorter time-to-market (Ragatz, Handfield, and Scannell 1997), improved creative problem solving (Giunipero et al. 2005), and lower purchase prices (Johnson et al. 2002). More recently, Driedonks et al. (2010, 2014) have turned research attention towards employee involvement and team processes enabling sourcing team effectiveness.
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Creativity in PSM Teams

The relevance of integrated thinking, free exchange of thoughts, and adaptive interaction among buyers and their stakeholders for value creating procurement is uncontested. An ever more connected marketplace introduces new hazards and alters existing assumptions, further adding to the complexity of the sourcing landscape. Deloitte (2013) predicts procurement to look very different in 2020 than it does today, including higher levels of volatility, increased levels of uncertainty, and intensified competition. Such drastic changes in the purchasing and supply environment bring about problems and opportunities that require new and relevant responses or solutions already today (George 2007). Buyers must address entirely new challenges with never-before-considered solutions, while solving current ones in more creative ways. Reinventing itself and coming up with innovative ideas that lead to valuable solutions is hence a foundational issue for procurement. And creativity is the precursor of such innovation (Amabile and Fisher 2000, Im et al. 2013). As most procurement-related work is carried out in teams – predominantly in sourcing teams with colleagues from other departments and in co-innovation teams together with supplier employees – it is imperative for procurement professionals to adopt collective creativity as a new working paradigm.

Creativity has traditionally been considered in the domain of organizational behaviour and psychology, with research focusing on the behaviour and performance of individuals (Choi, Anderson, and Veillette 2009; Hirst, Knippenberg, Chen, and Sacramento 2011; Zhang and Bartol 2010) or of individuals within groups (Gilson and Shalley 2004; Janssen and Huang 2008; Pirola-Merlo and Mann 2004). With a few notable exceptions (Wang, Bradford, Xu and Weitz 2008; Andersen and Kragh 2013; Anderson 2014), research on creativity in a general business context and especially in the procurement context is scant. The underlying mechanisms supporting creativity make it difficult to research the phenomenon in a procurement context, which is dominated by technocratic aspects as well as formal control and compliance mechanisms (e.g., sourcing plans, contracts). Predominantly informed by management theories centered on Transaction Cost Economics or the Resource Based View (Spina, Caniato, Luzzini, and Ronchi, 2016), procurement research focuses on cost-cutting as the function’s raison d’être (Tan 2001). It was mainly procurement’s cost-cutting ability during times of intense global competition during the 1980s that convinced CEOs of procurement’s strategic role in the first place. Excitement about the large savings generated through, for instance, analysis and consolidation of spend or category management tapered off quickly. Practitioners and scholars began to realize that “being a strategic business partner means so much more than negotiating a discount” (van Hoek 2013). The late 1990s then mark the beginning of an entire research stream investigating behavioural aspects, skills and competences necessary to maintain and then broaden procurement’s strategic role (Carter and Narasimhan 1996; Faes, Knight, and Matthyssens 2001; Giunipero and Pearcy 2000; Johnson, Leenders, and Fearon 1998). Embracing a broader set of
objectives required buyers to develop a richer, deeper set of skills to engage more fully with internal stakeholders and relevant external stakeholders (Zheng, Knight, Harland, Humby, and James 2007). In this context, creative thinking as part of a team is mentioned as a key competence for buyers.

Albeit great potential of the team approach for superior performance, teams do not provide a guarantee for success. On the contrary, many team initiatives fail to deliver expected results. In an attempt to shed light on possible sources of failure, Moses and Ahlstrom (2008) identified typical problems encountered by cross-functional sourcing teams and co-innovation teams with suppliers. Amongst them are the lack of a holistic view, misaligned functional goals, over-reliance on standard processes and inefficient decision-making by team members. At sight of such difficulties, Englyst et al. (2008) criticize the lack of theoretical insights and guidance on specific processes governing effective, creative problem-solving in teams. Recent advancements of Driedonks et al. (2010, 2014) reflect emerging scholarly interest for developing such a team perspective in PSM research. With firms increasingly depending on the creative potential of teams (Fischer, Giaccardi, Eden, Sugimoto and Ye 2005; Fisher and Amabile 2009), developing such a perspective is mandatory. Against this backdrop, borrowing from organizational behaviour research can be beneficial for advancing our understanding of collective creativity in a procurement context.

**Introducing Team Climates**

Contemporary research is univocal concerning the conceptual distinction between creativity as an output (i.e., how novel and useful the idea is) and creativity as a process (i.e., how the idea is achieved). Definitions of creativity as an output are consistent and mainly involve the dimensions of novelty and usefulness (Amabile 1983; Im and Workman 2004; Wang et al. 2008). The novelty of an idea implies that it is original and differs from conventional practice, while usefulness indicates that the idea provides benefits to the parties concerned. Or stated differently, “ideas cannot be merely new to be considered creative; they must be somehow appropriate to the problem or task at hand” (Amabile and Fisher 2000). It is the behavioural component of creativity (i.e., creativity as a process) that remains a black box to both practitioners and academics. Extant research on the creative process by which individuals act collectively to produce creative outcomes or solve problems as a team remains scattered, anecdotal, and overly context-specific (Anderson, Potocnik and Zhou 2014; Mumford 2000). A major reason for this might be the fact that the management of creativity is complex and paradoxical,

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5 In this dissertation, process describes how team inputs are transformed into outcomes. This description of process is in line with Hackman’s (1987) normative model of group effectiveness according to which team inputs are transformed into relevant outcomes by means of interaction between team members. This is also referred to as the Input-Process-Outcome (IPO) framework. In this dissertation, outcomes are equated with traditional KPIs including cost savings or sales turnover, while output denotes the creative idea or solution.
CHAPTER 1

and demands a fine balance between formal control and imaginative freedom (Amabile and Pillemer 2012; Mumford, Scott, Gaddis and Strange 2002; Shalley and Gilson 2004). This is also an apparent challenge during collective, creative solution-finding in sourcing and co-innovation teams. Buyers and non-procurement stakeholders from within or outside the organization must develop a shared understanding for effective teamwork without losing sight of their targets. This proves to be a difficult undertaking, considering that team members have different priorities, functional conflict and diverging perspectives (Driedonks et al. 2010; Englyst et al. 2008). Already Hackman and Morris (1975) argued that explanations for any particular input-output (performance) relationship are hiding in the team’s interaction process itself. The authors emphasize a need for “interventions that will help group members learn how to deal effectively with issues of individual differences within the group, and to create a climate that supports and facilitates learning and sharing of learning” (1975, pp. 37).

In such situations, organizational behaviour literature suggests that the group climate underlying teamwork is crucial for effective team performance (Anderson, De Dreu and Nijstad 2004; Ekvall 1996). Group or work-unit climate is defined as the *shared perceptions of team members regarding policies, procedures, and practices that are rewarded and supported in a specific work setting* (Zohar and Tenne-Gazit 2008). As such a climate develops, individual team members may become more comfortable to experiment with new forms of behaviour (i.e., creativity) and feel more confident to engage in the risky and anxiety-arousing activities required to exchange and extend knowledge and skills in a team setting (Hackman and Morris 1975). The process by which such climates arise is dynamic in nature, through team member interaction and socialization (Hackman 1987). As such, climate constructs constitute highly proximal measures for the collective sensemaking processes in work teams. An essential property of climates is that they can be facet-specific (de Jong, de Ruyter and Lemmink 2004; Schneider, Wheeler and Cox 1992). That is, climate constructs can be directed at a specific goal or activity and at a specific level (Schneider, Ehrhart and Macey 2013). For an investigation of the collective sensemaking processes in teams during creative problem-solving, the focal activity is creativity and the level is the project team. Climates are conceptualized as the shared perceptions of individual team members so that it is possible to measure it on the individual level and then aggregate individual measures to the team level. This is what is referred to as the referent-shift consensus model (Chan 1998). And finally, climates can be related to numerous important outcomes at the individual, group, and organizational level (Patterson, West, Shackleton, Dawson, Lawthom, Maitlis, and Wallace 2005). For instance, previous research has shown that climate constructs are appropriate for predicting expected performance outcomes such

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6 The term *sensemaking* is central to organizational studies by Weick (1995) and denotes the process by which people give meaning to experience and cues collected from their immediate surroundings. This process is interactive and entails the collective creation of shared awareness and understanding from the perceptions of individual team members.
as creative outcomes (Si and Wei 2012) or general firm performance (Baer and Frese 2003). In a similar fashion, a sourcing team’s creative climate can be related to relevant outcomes such as creative performance and financial performance. All in all, these properties make work-unit climate an appropriate theoretical lens for explaining how relevant creative behaviour originates bottom-up within a team. In this dissertation, Team Creativity Climate (TCC) forms the central construct of interest and is defined as team members’ shared perceptions of their joint policies, procedures, practices with respect to finding creative solutions.

OVERVIEW OF RESEARCH QUESTIONS

This dissertation starts from the premise that procurement professionals are pressured by their business leaders and/or internal customers to respond to two simultaneous demands: creating more value at lower costs than today. Against that background, the ultimate objective of this dissertation is to investigate:

How and to what extent do principles of collective creativity help sourcing and co-innovation teams in the design of solutions that contribute to the bottom- and top-line?

This overall research question (RQ) is addressed with three distinct but related empirical studies, each covering a specific research question. Answers to these questions are expected to deliver invaluable insights scholars and practitioners can use to equip and prepare procurement professionals for a future of continued value creation. Figure 1.2 provides an integrative overview of the studies as chapters in this dissertation.

The following section states the research questions and briefly outlines each respective study. Throughout this research the principles of triangulation were applied to inform our choice of research design as well as theory and to validate our findings. In that process a variety of procurement professionals were involved in qualitative interviews, workshops or large-scale data collection by means of an online survey. Scholars and experts were occasionally consulted to obtain advice or validate our choices. Figure 1.3 contains an overview of triangulation between theory and practice throughout the research process.
RQ 1: How to conceptualize and measure collective creativity in sourcing teams?

Chapter 2 introduces the central construct of this dissertation, TCC, and thus provides the basis of this dissertation. The chapter elaborates on the relevance of creative team climates for the work of sourcing teams and provides the theoretical foundation for the construct. Scholars emphasize that creativity in a procurement context is less concerned with the actual creative ability of individual buyers. Instead, creative thinking and solution-finding are more a matter of adopting a general, holistic view of procurement problems and viewing them in light of general events within and outside of organizational boundaries. That is, instead of relying on templates, buyers and internal stakeholders must make sense of a situation and develop a shared understanding about how to do things as a team – they should rely on ’TEAM’plates. Following a systematic scale development procedure involving a literature search, several practitioner interviews and empirical testing with a sample of 120 procurement professionals, TCC is conceptualized as such a ’TEAM’plate and a 9-item measurement scale developed. The theoretical contribution of the study is two-fold. First, proper conceptualization and measurement provide important cornerstones for advancing the behavioural research stream within procurement from only anecdotes to testable theory in form of hypotheses (Chen and Paulraj 2004). A second important contribution lies in embedding the TCC construct into extant literature on procurement in general and sourcing teams in specific. We thereby open up avenues for rigorous and relevant academic discourse on collective, creative problem-solving behaviour in procurement (van Weele and van Raaij 2014). The ultimate objective of Chapter 2 is to systematically build a case for creativity in procurement, thereby filling the void in research on collective creativity in procurement.
RQ 2: How does TCC facilitate sourcing team performance?

In Chapter 3, TCC is applied in an internal sourcing team context. In sourcing teams the challenge lies in the blending of diverse knowledge bases in novel ways to reduce (total) costs instead of only price. Knowing that procurement must not forget to deliver on the basics first, 85 per cent of CPOs cite cost reduction and cost avoidance as their top priority (Hackett Group 2016). Following an approach of collectively, creatively developing sourcing strategies, however, can help procurement leverage its bread-and-butter business. Together with internal stakeholders buyers can create bottom-line impact in more strategic, value-adding ways by, for instance, redefining the purchasing specifications or even internal customer needs, renegotiating payment terms and conditions, creating synergies across business units, and improving working capital expenditure (Rizza 2012). As this requires collective, creative problem-solving, TCC is integrated into a conceptual framework mediating between member capabilities and key performance outcomes including working capital improvements, cost avoidance and cost reduction. Data collected from 52 cross-functional sourcing teams is used to test whether TCC is a key driver of sourcing performance. In addition, team leader behaviour and team diversity are introduced as two relevant contextual moderators to this relationship.

RQ 3: How is TCC in co-innovation teams influenced by factors at the inter-organizational level during the generation and selection of creative ideas for commercialization?

Chapter 4 focuses on the application of TCC to co-innovation teams in which buyers collaborate with suppliers to generate and select creative ideas for commercialization. Growing revenue and thereby generating top-line value through co-innovation with suppliers is considered a supreme discipline of value creating procurement, even by highly mature procurement organizations (Accenture 2011). In the past, however, companies have struggled to successfully leverage co-innovation relationships with suppliers for generating sales growth. As some studies report a positive, some a negative and some zero association between (early) supplier involvement and innovation performance, extant research provides no explanation for this (Wagner 2012). Creative ideas originate from close interaction between individuals, which can be difficult to coordinate in mixed co-innovation teams. According to Hackman (1992), teams are embedded in an organizational context characterized by factors such as structure, leadership, culture or technology. This broader context can influence – both constrain or support – teams and their response. In order to investigate the manner and extent to which co-innovation teams are influenced by the broader inter-organizational context, TCC is introduced as the main driver of creative performance and exposed to the impact of two relevant moderator variables at the inter-organizational level, namely contractual governance and partner commitment. Using dyadic data collected from 47 co-innovation teams, the study investigates whether buyer’s and supplier’s sales turnover...
is greater for co-innovation teams with climates conducive of creativity, enabling them to better generate and select the most creative ideas for commercialization. Empirical testing of moderators helps to better understand the influence of contracts and relationship quality between the partnering firms on team work between buyer and supplier employees.
**Figure 1.3** Overview of Research Process

*Systematic review of innovation literature involving 5 academic raters to search (n=120) and select (n=75) articles in PSM field to explore and position team creativity in co-innovation

**3hr workshop with top management from all involved companies to discuss/ validate results and collect alternative explanations*
CHAPTER 2

Climate Setting In Sourcing Teams: Developing A Measurement Scale for Team Creativity Climate

Creative sourcing strategies, designed to extract more value from the supply base, have become a competitive, strategic differentiator. To fuel creativity, companies install sourcing teams that can capitalize on the specialized knowledge and expertise of their employees across the company. This article introduces the concept of a team creativity climate (TCC) - team members’ shared perceptions of their joint policies, procedures, and practices with respect to developing creative sourcing strategies – as a means to address the unique challenges associated with a collective, cross-functional approach to develop value-enhancing sourcing strategies. Using a systematic scale development process that validates the proposed concept, the authors confirm its ability to predict sourcing team performance, and suggest some research avenues extending from this concept.

The author of this dissertation (1st author) was the main researcher and responsible for the majority of work in this chapter. This research was conducted in collaboration with Rozemeijer, F.A. (2nd author), Hilken, T.G. (3rd author), de Ruyter, J.C. (4th author), and de Jong, A.D. (5th author). Promotors and co-promotors served as sparring partners and their feedback was implemented during several revision rounds.

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INTRODUCTION

Driven by competitive pressures, sourcing strategies constantly seek ways to satisfy customer demands and mitigate supply risk at lower costs (AT Kearney 2011; Eltantawy and Giunipero 2013). Developing such value-enhancing strategies is complex (Ellis et al. 2010; Wu and Pagell 2011) and demands substantial creativity and innovative problem solving (Giunipero et al. 2005; O’Brien 2012). According to a recent industry survey (State of Flux 2013), nearly 70% of buying companies have installed sourcing teams to formulate and implement creative sourcing strategies and thereby attain superior business performance (Hardt et al. 2007). These teams pool the problem-solving capabilities and specialized knowledge of employees from different functional backgrounds (Englyst et al. 2008). For example, at Target, sourcing is a cross-functional process and a competitive differentiator in its retail environment (Forbes 2015). By challenging product specifications or the underlying business need for a purchase, sourcing teams are able to creatively resolve problems (Giunipero et al. 2005), realize lower purchase prices (Johnson et al. 2002), and improve bottom-line results (AT Kearney, 2011).

However, it is also becoming clear that many sourcing teams fail to reach their full potential or meet general management expectations (Driedonks et al. 2014; Moses and Ahlstrom 2008). In a recent market survey (Deloitte 2014), more than half of participating Chief Procurement Officers (57%) believed their teams were incapable of delivering unique, effective solutions to current sourcing challenges. A major reason for this failure might be the widespread use of top-down instructions (i.e., formal sourcing processes, templates, and protocols), which are inadequate for guiding sourcing teams in formulating creative, value-enhancing strategies (Kauffmann et al. 2014; Monczka et al. 2010). For example, Englyst et al. (2008) criticize extant research for not providing concrete guidance on the specific processes that govern creative problem solving and effective team functioning. Understanding how an atmosphere conducive to creativity originates from the bottom up, within sourcing teams, instead may enable such teams to focus their attention directly on the processes needed to develop creative, value-enhancing sourcing strategies.

In our attempt to do so, we seek theoretical guidance from emerging team climate research. The concept of climate implies the shared perceptions of team members toward the policies, procedures, and practices that will be rewarded and supported in a specific work setting (Zohar and Tenne-Gazit 2008). It thus provides a means to capture the collective sensemaking process by which individual team members derive information about relevant role behaviours that are expected of them, to attain strategically-focused outcomes as a team (Schneider et al. 1992). In sourcing teams, a current challenge is to rely less on formal sourcing protocols and deploy creativity as a relevant role behaviour, instead. That is, sourcing teams appear to provide impactful means to attain breakthrough sourcing strategies (Pagell 2004; Trent and Monczka, 1994). However, little research conceptualizes or measures how creative processes and behaviours un-
fold in these teams (Driedonks et al. 2010; Englyst et al. 2008; Moses and Ahlström 2008). Within this study, we draw on work-unit climate research to address our central research question of how creative processes and behaviours unfold in sourcing teams. The purpose is to conceptualize the creativity climate in sourcing teams, develop a measurement instrument to assess the creativity climate in sourcing teams, and test its impact on sourcing team performance. With this approach, we contribute to extant literature in two important ways.

First, we conceptualize team creativity climate (TCC) as a facet-specific work-unit climate that can reveal how individual members collaboratively develop creative solutions to sourcing challenges. With the notable exception of Driedonks et al. (2014), scholars have ignored behavioural theory perspectives on how sourcing teams perform. Climate research offers an appropriate lens to examine how team members’ perceptions of or experiences in the immediate work environment influence a work group’s creative endeavors (Hunter et al. 2007). From this theoretical grounding, we develop a measurement scale that can capture creative work-unit climates in sourcing teams. To the best of our knowledge, prior sourcing literature has not offered a measurement scale for creative behaviour in teams. Following a systematic scale development process (Churchill 1979; DeVellis 1991; Netemeyer et al. 2003), we develop a one-dimensional measurement scale, using expert interviews and survey data collected from a sample of 120 sourcing professionals. In compliance with established scale development protocols, we conduct an empirical test of discriminant and convergent validity, reliability, and the unidimensionality of the target construct.

Second, we provide evidence of the predictive power of the newly developed scale for sourcing team performance; extant literature lacks evidence about the precise impact of creative team work on sourcing performance. We draw on previous research that demonstrates an inextricable link between team-level climates and strategically-focused output (Schneider et al. 1992). Because TCC can be related to relevant output, such as the extent to which sourcing strategies are truly creative, it offers the potential of contributing to bottom-line results. Specifically, we correlate team members’ ratings of the creativity climate with their team leaders’ ratings of the teams’ creative performance. Team leaders are experts in the domain of interest and can thus use their subjective judgment to assess the appropriateness of the solution for fulfilling business unit or corporate objectives (Amabile 1996; Amabile and Pillemer 2012).

In the next section, we offer a conceptualization of TCC and explain how it relates theoretically to the creative performance of sourcing strategies. Following a two-stage scale development process, we subsequently derive a measurement scale for the TCC construct. After formulating, purifying, and pretesting the scale items, we validate our construct as well as its impact on sourcing performance with data from a sample of 52 sourcing teams. We conclude with a discussion of the theoretical and managerial implications.
CHAPTER 2

CONCEPTUAL BACKGROUND

Theoretical Perspectives on Creativity

The complex and competitive sourcing environment requires sourcing teams to look for solutions off the beaten paths (Giunipero et al. 2005). Given the multi-dimensionality of sourcing effectiveness, decision-makers have to seek a delicate balance between cost, value and risk (Driedonks et al. 2010). This new sourcing reality has led to a call for more creativity and innovative problem-solving in the procurement profession in general and within sourcing teams in particular (Deloitte 2013). For several years, companies have relied on a multitude of creative methods, trainings and processes advocated by consultants or experts of applied creativity (e.g. Synectics: Gordon 1961; Lateral Thinking: De Bono 1985; Intuition: Mintzberg,1998; TRIZ: Terninko, Zusman, and Zlotin 1998). Intended to facilitate the development of novel and meaningful solutions to problems, their validity has been contested by creativity scholars (see e.g., Sternberg and Lubart 1999). According to Puccio et al. (2006), this abundance of creative methods might have contributed to the view that the field of creativity is imbalanced towards application and lacks scientific rigor. In an attempt to build a stronger theoretical foundation for empirical research on the applied nature of creativity, we thus set out to shed light on more fundamental aspects of creative problem-solving in work groups, such as sourcing teams.

Contemporary research increasingly distinguishes between creativity as an output (i.e., how novel and useful the idea is) and creativity as a process (i.e., how the idea is achieved). While scholars agree that more attention is needed to elucidate the creative process by which individual members produce creative outcomes at the team level (Anderson et al. 2014; Mumford 2000), the approaches taken to explicate this process are varied. Drazin et al. (1999) stipulate a process-oriented sensemaking perspective to describe employees’ participation in creative behaviour. This perspective is focused on “how individuals attempt to orient themselves to, and take creative action in, situations or events that are complex, ambiguous, and ill defined” (p. 287). In contrast, Zhang and Bartol (2010) adopt a behaviour-oriented approach and use an engagement perspective to argue that the extent to which employees engage in creativity-relevant methods or processes – such as problem identification, information search and idea generation – is decisive for attaining creative outcomes. Haslam et al. (2013) adopt a social identity perspective to explain the eminent role of teams in stimulating and shaping creative acts and determining the reception or judgment of individual team members’ ideas. A shared social identity motivates people to rise to creative challenges and provides a basis for recognizing certain forms of creativity among team members.

On a similar note, studies on work-unit climates examine how people’s perceptions of or experiences in the immediate work environment influence a team’s creative endeavors (Hunter et al. 2007). The theoretical foundation for climate formation recog-
nizes that team climates originate from the bottom up within teams and thereby shape team members’ behaviour. Hackman’s (1987) model of group effectiveness similarly posits that the process by which team-level climates arise is dynamic in nature, such that the construction of shared meaning occurs through team member interactions. As a proxy for the creative sensemaking process among sourcing team members, climate constructs qualify as team-level process variables that can explain how collective, creative behaviour translates into creative solutions (Anderson et al. 2014). Therefore, the climate perspective offers an appropriate lens for conceptualizing the collective sensemaking process that occurs during creative sourcing teamwork. Adopting this team process focus, and in line with previous conceptualizations of facet-specific climates, we define TCC as *team members’ shared perceptions of their joint policies, procedures, and practices with respect to developing creative sourcing strategies*.

**A Conceptualization of Team Creativity Climate**

When people must perform work activities as a team, the notion of climate might provide a missing link between management-related factors and desired outcomes (Anderson et al. 2014). According to Katz and Kahn (1978), climate is the result of a distinct pattern of individual team members’ collective beliefs that are developed through interaction with their social environments. As climate research evolved, scholars have introduced distinct climate constructs for varying contexts and levels of analysis (Schneider et al. 2013), including customer service (Schneider et al. 1998), safety (Zohar 1980), and innovation (Scott and Bruce 1994) climates. Climates directed at a specific goal or activity (e.g., creativity) and at a specific level (e.g., team) thus offer highly proximal measures of the process by which team members develop a sense of “the way we do things around here” (Schneider et al. 1996, p. 12). Scholars argue that these facet-specific climates can better capture the phenomenon of interest and its relationship with any particular outcome than generic or organizational climates (Zohar and Luria 2004; Zohar and Tenne-Gazit 2008). Therefore, we opt for a facet-specific description of a work-unit climate to understand how individual sourcing team members might derive meaning from their participation in collective creativity as well as their interactions with one another to devise business solutions (Hoegl et al. 2003).

An important contribution of this study is that we make creativity the focal facet of work-unit climates in sourcing teams, by focusing on the process by which sourcing team members collectively develop creative, value-enhancing sourcing strategies. According to Amabile (1996), creativity is commonly defined as the production of novel and useful ideas in any given domain. It is seldom the result of an individual employee’s efforts. Instead, increasing managerial and theoretical support emphasizes the importance of shared perceptions. In particular, as strategic sourcing has emerged primarily as a team responsibility (State of Flux 2013; Trent 2004), creativity results largely from collaborations within collectives (Anderson et al. 2014; Driedonks et al. 2010;
Fischer et al. 2005; Fisher and Amabile 2009). A team perspective on sourcing strategy development increases solution flexibility and quality, because it pools more broad and deep functional knowledge and skills (Englyst et al. 2008).

The precondition for spotting breakthrough ideas for sourcing strategies is that team members have open minds and exhibit their willingness to gain a deeper understanding of the sourcing category, internal stakeholders, suppliers, supply markets, supply chain risks, and opportunities (Driedonks et al. 2010; Monczka et al. 2010; O’Brien 2012). Against this background, the challenge of developing value-enhancing sourcing strategies as part of a team becomes evident: Team members must accommodate or overcome contrasting viewpoints, different ways of doing things, and silo thinking to arrive at shared mental models (Zhang and Bartol 2010). Only then is it possible to develop collaborative, creative sourcing strategies that contribute to a company’s top and bottom lines. Sharing ideas, communicating viewpoints, and discussing positions with a myriad of organizational stakeholders are crucial tactics to develop a shared perception of the problem or task that the team confronts, as well as its possible resolution and corporate-level implications. In this context, the presence of strong team climates might be indicative of the fact that power issues, political behaviour, and information asymmetries are overcome – or at least efficiently dealt with.

The Climate - Sourcing Team Performance Link

Facet-specific work unit climates correlate strongly with numerous output criteria of interest (De Jong et al. 2004; Patterson et al. 2005; Zohar and Luria 2004). Previous research has shown that climate constructs are appropriate for predicting creative performance (e.g., Si and Wei 2012) or general firm performance (e.g., Baer and Frese 2003). In a similar fashion, a sourcing team’s creative climate is likely to relate to relevant output, such as the extent to which the sourcing strategy is creative and enhances value. Because value-based sourcing constitutes a relatively new field for sourcing professionals, assessments of creative and value-focused sourcing strategies demand holistic measures to evaluate their success (Monczka et al. 2010). Established key performance indicators (KPIs), such as working capital expenditures or price and cost reductions, typically serve to assess bottom-line outcomes. These conventional KPIs need to be preceded by and complemented with measures of the intangible, abstract nature of creative and value-enhancing sourcing strategies. Creative performance thus tends to involve two dimensions: novelty (i.e., outputs are new and different) and meaningfulness (i.e., outputs are appropriate and useful for the target audience) (Amabile 1983; Carson 2007; Im et al. 2013). To determine sourcing strategies’ ability to fulfill business unit or corporate objectives, we also assess their specificity (i.e., outputs are described in detail) and feasibility (i.e., outputs can be implemented with existing resources and skills) (Kim and Wilemon 2002).
Figure 2.1 Scale Development Process Chart

**Stage 1, The Front End**

**Item Generation**
- **Literature Review**
  - Derive measurement items from literature
  - Corroborate with insights from expert interviews
- **Expert Interviews**
  - Conduct interviews with five sourcing professionals
  - Corroborate with insights from literature review

**Item Refinement**
- Seven academic experts judge items’ content and face validity
  - Modify scale as necessary (reduce 27 items to 24)

**Scale Purification & Pretesting**
- Perform EFA of survey data from 120 sourcing professionals
  - Modify scale as necessary (reduce 24 items to 9)

**Stage 2, The Back End**

**Confirmatory Analysis**
- Perform CFA of survey data from 253 sourcing team members and their 52 team leaders
  - Confirm final scale (9 items)

**Reliability**
- Cronbach’s alpha
- Composite reliability

**Unidimensionality**
- $\chi^2$ test
- RMSEA, RMR, GFI, CFI, AGFI
- PCA

**Discriminant Validity**
- Standardized loadings
- $R^2$ analysis
- AVE analysis

**Nomological Network**
- Correlation analysis of final scale with creative performance outcome measures
- Comparative evidence for the predictive power of the final scale
CHAPTER 2

SCALE DEVELOPMENT AND VALIDATION: A TWO-STAGE PROCESS

Valid and reliable measurement lies at the heart of any scientific endeavor (Netemeyer et al. 2003). Thus, it requires a systematic approach to developing conceptually relevant, psychometrically sound measurement instruments (Churchill 1979; DeVellis 1991). To operationalize a facet-specific climate construct such as TCC, we followed a two-stage multi-item scale development approach, as proposed by Rosenzweig and Roth (2007) and Menor and Roth (2007) and depicted in Figure 2.1.

Stage 1: Item and Scale Construction

Item Generation and Refinement. The primary purpose of the first stage is to provide a conceptual foundation for the TCC construct and arrive at a representative measurement item pool that captures the domain of interest (Churchill 1979; DeVellis 1991; Netemeyer et al. 2003). We derived initial measurement items from a thorough investigation of creative behavior research (Gilson and Shalley 2004), as well as creativity and innovation climates (Anderson and West 1998; Ekvall 1996; Isaksen and Ekvall 2010; Isaksen and Akkermans, 2011). We conducted face-to-face interviews with five sourcing professionals from the fast moving consumer goods, manufacturing, and chemical industries. All practitioners were men and came from Sweden (1), the Netherlands (3), or the United Kingdom (1). They held senior management positions, with general work experience ranging from 6.5 to more than 20 years and sourcing-related work experience of 10 years on average. As a prerequisite, all respondents participated in sourcing-related teamwork at the time of the interview. Thus, each interviewee was knowledgeable about the research topic and representative of the sample of sourcing professionals that we ultimately targeted with the final survey (Rosenzweig and Roth 2007). The interviewees named aspects that contributed to their sourcing team’s creative performance and helped complement insights gained from prior research (Netemeyer et al. 2003).

Corroboration of the practitioner input with the initial measurement items from the literature review resulted in a pool of initial 27 items (see Appendix A). Because our target construct describes a team-level process, we used the team as a referent in formulating the items. Consistent with the referent shift consensus model (Chan 1998), the use of referent formulations such as “team,” “our,” and “we” constitute a precondition for the aggregation of scale items measured at the individual level to the team level of analysis. That is, aggregating referent shift items is conceptually appropriate because they refer to the level (i.e., team) to which individual responses will be aggregated (Le Breton and Senter 2008). To establish empirical evidence that the respondents offered shared perceptions, we assessed the degree of “sharedness” with an interrater agreement approach (James et al. 1984). The $r_{wg}$ measure reflects the extent to which re-
Spondents agree in their assessment of climate, such that their ratings should be largely interchangeable (Schneider et al. 2013).

Finally, before proceeding to the item reduction stage of the scale development (see Appendix B), we obtained expert judgments of the items’ content and face validity, and adjusted, added or dropped items as necessary (Churchill 1979; DeVellis 1991; Netemeyer et al. 2003). Seven faculty members from the supply chain management department of a university commented on the item wording and judged each item’s relevance to our conceptual definition of TCC. This qualitative input produced a final pool of 24 initial items that were proofread, formatted, and prepared for inclusion in the pilot study.

Scale Purification and Pretesting. A pilot study served to purify the scale and establish the initial psychometric scale properties. During November and December 2013, we disseminated an electronic survey to industry experts through the online channels of NEVI, the Dutch association of purchasing professionals. We collected 140 responses, of which 120 were complete. Considering our narrowly defined construct and the reasonable size of the initial item pool, a sample size between 100 and 200 provided an adequate basis for further item and factor analysis (Netemeyer et al. 2003). These respondents were sufficiently knowledgeable about the research topic, in that they spent, on average, 53% of their total work time in a sourcing team. Moreover, the respondents primarily represented senior (42%) or middle (32%) management levels, and a large majority (79%) actively led one or more sourcing teams. Surveying senior-ranking informants yields more reliable results than lower-ranking informants (Rosenzweig and Roth 2007). Our sample also covered a variety of industries, including manufacturing, food and beverages, construction, and financial services. Therefore, our sample can be considered representative of the population of sourcing professionals.

The respondents received a brief definition of creative sourcing teamwork, and were then asked to use a five-point Likert scale (1 = “fully disagree,” 5 = “fully agree”) to indicate how relevant they regarded each of the 24 items for a creative climate in sourcing teams. To affirm discriminant validity and emphasize the uniqueness of the facet-specific TCC construct, we included the 14-item team climate inventory (TCI) scale (Anderson and West 1998) and the 8-item constructive controversy (CC) scale (Chen et al. 2005). Both constructs relate conceptually to TCC, yet we expect them to be ill-suited for measuring creativity in a sourcing team context, as defined in our conceptual development. This is due to the fact that the TCI scale was developed for various team contexts (e.g., hospital teams, oil company teams) and tasks (e.g., nursing, management, psychiatric care) and the CC scale specifically aims to measure conflict management in teams.

We followed Netemeyer et al.’s (2003) recommendation and used 3-point categorization ratings to assess the degree to which items represent the construct’s definition and domain. Experts were asked to rate each item’s relevance vis-à-vis our definition (i.e., “low,” “moderate”, “high”).

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7 We followed Netemeyer et al.’s (2003) recommendation and used 3-point categorization ratings to assess the degree to which items represent the construct’s definition and domain. Experts were asked to rate each item’s relevance vis-à-vis our definition (i.e., “low”, “moderate”, “high”).
We performed Harman’s (1976) single-factor test to check for common method bias. No single factor accounted for the majority of the variance explained (max. = 37.25%), so common method bias was not a prominent concern (Podsakoff et al. 2003). We assessed non-response bias by comparing early (first 60) and late (last 60) respondents’ scores on all construct variables and selected demographic variables (Armstrong and Overton 1977). Although early respondents were slightly older than late responders, we found no significant differences in work time spent in sourcing teams, work experience, management level, industry, or the TCC, TCI, and CC construct means.

We used an exploratory factor analysis (EFA) with principal components analysis (PCA) and direct Oblimin rotation on the 24 TCC items. The correlation matrix, Kaiser-Meyer-Olkin (KMO) criteria, and Bartlett’s test of sphericity revealed the suitability of the data for factor analysis. Specifically, the correlation matrix exhibited significant coefficients above .3 (Tabachnick and Fidell 2007), the KMO value of .91 exceeded the recommended cut-off value of 0.6 (Kaiser 1970), and Bartlett’s (1954) test of sphericity reached statistical significance at the 1% level (p < .001, χ²(df) = 1439.76 (276)). The first PCA with all 24 items yielded six factors with eigenvalues exceeding 1, explaining 40.6%, 6.1%, 5.6%, 4.6%, 4.3%, and 4.2% of the variance. However, the scree plot indicated a clear break after one component (Figure 2.2), implying a one-factor solution. Additional parallel analyses confirmed the presence of a one-factor solution (Horn 1965). To arrive at a more parsimonious scale, we dropped items with low loadings (< 0.3) on the first factor (Floyd and Widaman 1995) and communalities below .4 (Hair et al. 2010), in a stepwise iterative manner. This procedure reduced the number of scale items from 24 to 9, for a reduction ratio of 2.67, in line with common suggestions for adequate domain sampling⁸ (De Vellis 1991; Netemeyer et al. 2003) and good scale development practices in operations management research (i.e., 3.25, Ambulkar et al. 2015; 2.24, Menor and Roth 2007; 2.86, Rosenzweig and Roth 2007).

---

⁸ We followed De Vellis’s (1991) recommendation and applied domain sampling to generate items tapping the construct’s domain: “Domain sampling suggests that a measure be composed of a sample of items from a large hypothetical domain of items. There exists a large pool (domain) of items that could tap the domain of the construct, and to arrive at a final scale measure, as sample of items from this domain with desirable psychometric properties must be selected.” (p. 95)
An EFA of the remaining nine items resulted in the extraction of a single factor (Table 2.1). The final nine-item TCC scale accounted for approximately 61% of variance in the items, with significant factor loadings above 0.5 for all items (Hair et al. 2010). Moreover, the scale exhibited good internal consistency, with a Cronbach’s alpha (0.92) that exceeded the recommended threshold of 0.7 (De Vellis 1991). We also examined the scale with respect to its discriminant validity, that is, whether the construct shared more variance with its own measures than with the related CC or TCI constructs (Chin 1998). Fornell and Larcker (1981) suggest that the square root of the focal construct’s average variance extracted (\(\sqrt{AVE} = 0.833\)) should exceed its correlation with related constructs (\(\text{CorrCC}\times\text{TCC} = 0.710; \text{CorrTCI}\times\text{TCC} = 0.709\)). The correlation matrix in Table 2.2 affirms this requirement, in support of the discriminant validity of the nine-item TCC measurement scale, relative to both TCI and CC. Despite their conceptual distinctiveness, we found no evidence of discriminant validity across the TCI (\(\sqrt{AVE} = 0.756 < \text{CorrCC}\times\text{TCI} = 0.983\)) and CC (\(\sqrt{AVE} = 0.740 < \))
Table 2.1 EFA Summary

<table>
<thead>
<tr>
<th>Item</th>
<th>Coefficients</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCC1 In our team we are open to each other’s views and ideas.</td>
<td>0.853</td>
<td>0.728</td>
</tr>
<tr>
<td>TCC2 In our team we strive to think across departmental boundaries.</td>
<td>0.790</td>
<td>0.624</td>
</tr>
<tr>
<td>TCC3 In our team we actively seek out each other for constructive discussions.</td>
<td>0.700</td>
<td>0.490</td>
</tr>
<tr>
<td>TCC4 In our team we are encouraged to try new ways of doing things.</td>
<td>0.819</td>
<td>0.671</td>
</tr>
<tr>
<td>TCC5 In our team we are comfortable with exploring unfamiliar or unknown ideas and perspectives.</td>
<td>0.770</td>
<td>0.593</td>
</tr>
<tr>
<td>TCC6 In our team we openly share our thoughts without fear of rejection.</td>
<td>0.737</td>
<td>0.544</td>
</tr>
<tr>
<td>TCC7 Building on each other’s ideas is an integral part of how we work in our team.</td>
<td>0.821</td>
<td>0.674</td>
</tr>
<tr>
<td>TCC8 In our team every team member’s contribution is taken seriously.</td>
<td>0.829</td>
<td>0.688</td>
</tr>
<tr>
<td>TCC9 In our team we promote behaviours that are conducive towards a trustful environment.</td>
<td>0.716</td>
<td>0.512</td>
</tr>
</tbody>
</table>

Eigenvalue 5.523
Percentage of variance explained 61.369%
Cronbach’s α 0.920

Table 2.2 Construct Intercorrelations

<table>
<thead>
<tr>
<th>Construct</th>
<th>Mean</th>
<th>S.D.</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Team creativity climate</td>
<td>4.403</td>
<td>0.627</td>
<td>0.833</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Constructive controversy</td>
<td>4.161</td>
<td>0.607</td>
<td>0.710</td>
<td>0.756</td>
<td></td>
</tr>
<tr>
<td>3. Team climate inventory</td>
<td>4.243</td>
<td>0.590</td>
<td>0.709</td>
<td>0.983</td>
<td>0.740</td>
</tr>
</tbody>
</table>

Notes: The square root of the average variance extracted is on the diagonal.

CorrCC×TC = 0.983) constructs. Thus, we confirmed our proposition that TCC is uniquely well suited to the sourcing team context, and we demonstrated its psychometric superiority compared with seemingly similar constructs. The first-stage results, based on a literature review, practitioner interviews (n=5), expert judging (n=7), and pilot study (n=120), thus provide a tentatively reliable, valid, nine-item scale as a basis for the second-stage confirmatory analysis.
Stage 2: Confirmatory Analysis

Sample and Survey Design. To confirm our initial assessment of scale validity and reliability, we conducted a confirmatory factor analysis (CFA) on data obtained from a larger sample. These survey data came from four global companies operating in the chemical, construction, manufacturing, and oil and gas industries. To further distinguish our proposed construct from seemingly related ones, we included creative ability (CA; Amabile 1983; Choi et al. 2009), task expertise (TE; Amabile et al. 1994), and task motivation (TM; Amabile et al. 1994) constructs in our survey. In line with the componential theory of creativity (Amabile 1983), we regard all three constructs as antecedents, rather than inherent characteristics, of a creative team climate, such that we expect significant differences across constructs. Such differences also should give rise to theoretical considerations that TCC might serve as process variable, mediating between input and output variables, as suggested by Hackman’s (1987) input-process-output theory. Accordingly, we first attempt to provide evidence of the predictive power of the TCC construct by collecting team members’ and team leaders’ ratings of the creative performance of the sourcing teams (Im et al. 2013). The items for all constructs were measured on five-point Likert scales (1 = “strongly disagree,” 5 = “strongly agree”). We e-mailed the survey to 315 team members of 52 sourcing teams across four companies. After several reminders, we received 253 complete responses from team members and 52 complete responses from team leaders, yielding 80% and 100% response rates, respectively. On average, respondents had been working for their sourcing team for approximately 2 years and averaged 19 years of general work experience. Approximately 70% of respondents reported that they were currently also working in other teams. Sample respondent job titles included global purchasing manager, category manager, procurement director, and strategic buyer.

Harman’s (1976) single-factor test indicated that the largest variance explained by a single factor was 30.93%, indicating an absence of common method bias in this second study (Podsakoff et al. 2003). A comparison of early (first half) and late (second half) respondents’ scores (Armstrong and Overton 1977) within each company did not reveal any statistically significant differences for the constructs under analysis (TCC, CA, TE and TM). Further, respondents did not differ in age, work experience, time of employment with current firm, and percentage of work time spent in sourcing teams.

Reliability. To augment our assessment of scale reliability, we derived a composite reliability coefficient (Fornell and Larcker 1981) from a CFA in AMOS 20. As we show in Table 2.3, the Cronbach’s alpha and composite reliability both exceeded the common threshold of 0.70 (De Vellis 1991), indicating good construct reliability of the TCC scale.

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9 The data collected through this survey is the same data as employed in Chapter 3. Only a part of this data was used in Chapter 2 to perform Confirmatory Factor Analysis.
Unidimensionality. We assessed scale unidimensionality with several model fit statistics and indices. The chi-square test results indicate a poor model fit, with a large, significant chi-square statistic ($\chi^2 = 82.588; p < 0.001$). However, for large samples, the chi-square test of model fit may erroneously reject a valid model (Gatignon 2010). Hair et al. (2010) assert that a large, significant chi-square statistic for samples larger than 250 is not indicative of poor model fit, so other measures must be consulted. The root mean square error of approximation (RMSEA = 0.090 < 0.1) is robust to differences in sample size; for our data, it indicated a moderate model fit (Hu and Bentler 1999). The root mean square residual (RMR = 0.027 < 0.05) also supported the scale’s unidimensionality (Hair et al. 2010; Hu and Bentler 1999). The goodness-of-fit index (GFI = 0.92 > 0.9), comparative fit index (CFI=0.946 >0.9), and adjusted goodness-of-fit index (AGFI = 0.872 > 0.8) all were well above the respective threshold values (Hair et al. 2010). Finally, a separate PCA with direct Oblimin rotation resulted in the extraction of a single factor, which confirmed our conclusions with regard to scale unidimensionality.

Convergent and Discriminant Validity. The use of an independent research design and sample in each stage of the scale development process enabled us to hedge against single-source or common method biases (Rosenzweig and Roth 2007). A more quantifiable way to demonstrate convergent validity is to consider each scale item as a different approach to measuring the construct and determine whether all items converge. We therefore examined the magnitude and sign of the item factor loadings (see Table 2.3). Each standardized loading was in the anticipated direction and statistically significant at $p < 0.05$ (Froehle and Roth 2004). Moreover, all items’ R-square values were larger than 0.30, and much of the variance in each item was accounted for by the overall TCC construct (Chen and Paulraj 2004). The AVE for the TCC scale also exceeded the cut-off value of 0.5 (Fornell and Larcker 1981; Rosenzweig and Roth 2007). Finally, we consulted the Bentler-Bonett (1980) normed fit index (NFI = 0.922>0.9), which indicated the strong convergent validity of the scale (Hair et al., 2010). With regard to discriminant validity, we determined whether the TCC construct shared more variance with its own measures than with related yet conceptually different constructs. The correlation matrix in Table 2.4, with the square root of the constructs’ AVEs on the diagonal, reveals that the square root of the AVE for TCC (0.788) exceeded its correlations with any other constructs (CorrCA×TCC = 0.686; CorrTE×TCC = 0.684; CorrTM×TCC = 0.505), in strong evidence of discriminant validity.
Table 2.3 CFA Results

<table>
<thead>
<tr>
<th>Item</th>
<th>$SL$</th>
<th>Critical ratio</th>
<th>$R^2$</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCC1</td>
<td>0.743</td>
<td>10.54***</td>
<td>0.53</td>
<td>4.166</td>
<td>0.6987</td>
</tr>
<tr>
<td>TCC2</td>
<td>0.678</td>
<td>12.25***</td>
<td>0.42</td>
<td>4.028</td>
<td>0.8747</td>
</tr>
<tr>
<td>TCC3</td>
<td>0.781</td>
<td>10.89***</td>
<td>0.57</td>
<td>3.913</td>
<td>0.8020</td>
</tr>
<tr>
<td>TCC4</td>
<td>0.699</td>
<td>9.793***</td>
<td>0.40</td>
<td>3.648</td>
<td>0.7810</td>
</tr>
<tr>
<td>TCC5</td>
<td>0.632</td>
<td>9.851***</td>
<td>0.40</td>
<td>3.775</td>
<td>0.7404</td>
</tr>
<tr>
<td>TCC6</td>
<td>0.636</td>
<td>11.78***</td>
<td>0.49</td>
<td>4.170</td>
<td>0.7338</td>
</tr>
<tr>
<td>TCC7</td>
<td>0.753</td>
<td>10.07***</td>
<td>0.61</td>
<td>3.889</td>
<td>0.7738</td>
</tr>
<tr>
<td>TCC8</td>
<td>0.649</td>
<td>11.37***</td>
<td>0.46</td>
<td>4.178</td>
<td>0.7155</td>
</tr>
<tr>
<td>TCC9</td>
<td>0.728</td>
<td>10.54***</td>
<td>0.55</td>
<td>3.877</td>
<td>0.7049</td>
</tr>
</tbody>
</table>

Cronbach’s α 0.895
Composite reliability (CR) 0.940
Average variance extracted (AVE) 0.621

*** $p < .001$.

Table 2.4 Construct Inter correlations

<table>
<thead>
<tr>
<th>Construct</th>
<th>Mean</th>
<th>S.D.</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Team creativity climate</td>
<td>3.960</td>
<td>0.560</td>
<td>0.788</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Creative ability</td>
<td>3.661</td>
<td>0.568</td>
<td>0.686</td>
<td>0.758</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Task expertise</td>
<td>3.999</td>
<td>0.539</td>
<td>0.684</td>
<td>0.691</td>
<td>0.778</td>
<td></td>
</tr>
<tr>
<td>4. Task motivation</td>
<td>3.565</td>
<td>0.716</td>
<td>0.505</td>
<td>0.629</td>
<td>0.587</td>
<td>0.803</td>
</tr>
</tbody>
</table>

Notes: The square root of the average variance extracted is on the diagonal.

Nomological Validity. Finally, to assess nomological validity, we investigated whether the TCC construct was positively associated with one or more relevant outcome variables. Consistent with extant theorizing (Si and Wei 2012), we expect that a more positive creativity climate in a sourcing team corresponds with more positive creative outcomes. We therefore let the 253 participating team members and their 52 team leaders rate their team’s creative performance (novelty, meaningfulness, feasibility, specificity) on multi-item Likert type scales (1 = “fully disagree,” 5 = “fully agree”). By aggregating the team member scores on creative climate and performance to the team level, we formed team averages (James et al., 1984). The Pearson correlations indicated that TCC related positively to both team members’ evaluations of creative performance ($r=0.694$, $p<0.001$) and team leaders’ evaluations of these outcomes $10$ ($r = 0.382$, $p < 0.01$). These

10 It is favorable to make use of multiple independent data sources, instead of one. We made use of employee and manager ratings as two independent data sources to avoid common method bias. Methodologically, it is most favorable to have subjects (i.e., employee’s) performance rating to be evaluated by someone else who is knowledgeable (i.e., in most cases this is the manager) rather than relying on self-reported ratings.
values are comparable to or higher, on average, than the correlations between TCI and innovative performance in previous studies (e.g., 0.36–0.53, Kivimäki and Elovainio 1999). That is, TCC performs well relative to established climate constructs and constitutes a reliable, valid construct for predicting sourcing teams’ creative performance.

CONCLUSION

At the heart of this study lies the recognition that developing creative sourcing strategies is a social endeavor. It arises from collective sensemaking and interactions among employees assigned to sourcing teams, as well as other involved stakeholders. These teams cannot rely fully on standard processes or top-down instructions to develop breakthrough sourcing strategies. Accordingly, this study set out to illuminate the process by which team members develop shared beliefs about how to approach creative sourcing strategy building. Drawing on the notion of work-unit climates and adopting creativity as the focal facet, this study makes two primary contributions.

First, we introduce a creative team climate construct to account for the collective sensemaking process that precedes the origination of creative and successful strategies in sourcing teams. Following established scale development rules, we built a scale to assess the sourcing team’s creative climate. Rigorous and relevant research is needed to advance the insights on creative sourcing team behaviour from anecdotes to testable theory (Van Weele and Van Raaij 2014). In this effort, TCC represents a valid and reliable measurement instrument to address the dynamics inherent to creative work in sourcing teams. By drawing on the organizational behaviour domain, we fill a research void associated with creative work behaviour in sourcing teams, as is evident in current sourcing literature. Specifically, we follow recent advances by Driedonks et al. (2010, 2014), who investigate team effectiveness from a behavioural perspective and focus on soft or social factors of sourcing teamwork.

Second, we provide evidence of the predictive power of the TCC construct, by placing it in a nomological network. The newly developed construct captures a great deal of explained variance in the actual creative performance of the 52 sourcing teams from which we obtained survey data. The Pearson correlation values in this study are appropriate, relative to the values reported in other studies (e.g., Kivimäki and Elovainio 1999). In sum, TCC offers a reliable, valuable team process construct that can be deployed in further research related to sourcing team performance.

Managerial Implications

From a managerial point of view, this study aims to sensitize sourcing team leaders to the soft or social factors that underlie team performance. The general change in focus, from cost to value, requires the adoption of different working styles to respond to con-
temporary sourcing challenges. Formal processes and technocratic measures alone cannot suffice. Instead, these measures must be complemented by efforts to encourage and fuel creative behaviour among sourcing teams. Our research offers a starting point, in that we offer sourcing team leaders an inventory of specific behaviours and activities that can build sourcing strategies in creative ways. The individual items of the TCC scale provide sourcing team leaders with concrete guidance about which behaviours they can adopt to promote creative role behaviour among sourcing team members.

Sourcing team leaders also can use the TCC scale as a comprehensive, ready-to-use measurement instrument for assessing their sourcing teams’ creative climates. In addition to using the climate scores as a basis for designing and planning corrective actions to improve sourcing team performance, they facilitate benchmarking across sourcing teams. Including the TCC scale as an additional KPI that complements conventional team evaluation can provide leaders with a more holistic view of their teams’ performance.

The principles of creative team climates might be integrated into team workshops and leadership training to raise awareness and provide guidance for creative behaviour in sourcing teams. The behaviours and activities described by the items that constitute the TCC scale also can be used to design and target human resource incentives and initiatives more effectively to encourage sourcing teams’ performance.

Managers and team leaders can choose from a vast array of creativity techniques, tools, and instruments developed by consultants and experts to help their teams become more creative. However, while companies oftentimes hire and pay these external consultants or trainers, using their techniques comes with no guarantee of more creative ideas. In contrast, our measurement scale offers a fairly simple and inexpensive way to assess and systematically manage a team’s underlying creative climate. In more practical terms, training budget could be utilized more efficiently by basing the decision of whether or not, and what type of training is needed on the respective climate score. We also believe that our TCC scale and other relevant creativity techniques can be used in a complementary fashion.

As the sourcing landscape is very diverse in terms of what is sourced (i.e. product, service, process) and from where it is sourced (i.e. markets, industries, regions), one might raise the issue whether creativity is relevant for all sourcing teams. Clearly, creativity may be less relevant for highly standardized purchases, compared to highly strategic and technically complex ones. Nonetheless, the sourcing of products as simple as doors is growing in complexity, as exemplified by a sourcing manager from the construction industry in one of our valorization workshops:

“A door is not simply a door anymore. Doors do not have a single key anymore but have an electronic lock with a code. There are many details to specify, ranging from material to be used, design, safety etc. That in turn, has as a consequence that being a generalist is not sufficient anymore. Deep and specialized knowledge is needed.”
Such sourcing assignments demand the collaborative work of a cross-functional team in which each and every one brings in their own expertise. We point managers to Kraljic’s (1983) widely used purchasing portfolio analysis for guidance on the type of purchases that require high levels of creativity. Although we see opportunities for creative sourcing behaviour in all four quadrants of the purchasing portfolio, we suggest focusing on creative climates when sourcing teams are involved in highly strategic items with large financial impact.

In addition, purchasing organizations may differ tremendously in maturity, as reflected in differences in the quality of processes, systems and people employed in sourcing. As such, purchasing maturity accounts for contextual differences in sourcing teams’ composition, focus, strategy, structure, targets, information systems and staff (Keough 1993; Rozemeijer 2008). According to participants of one of our valorization workshops, strategic sourcing is “not only about what you do, but also how you do it”. This seems especially true when procurement engages in supply chain optimization, actively participates in innovation projects or heads cross-functional sourcing teams. As these activities are typically associated with higher purchasing maturity (Schiele 2007), we believe that the need for creative climates in sourcing teams is most pronounced in organizations at higher stages of purchasing maturity. That is, companies with higher purchasing maturity have more opportunities for using creativity as a means to create value. In contrast, teams in less mature purchasing organizations are not included in the corporate strategic planning process, occupy a rather passive role in setting the business agenda, have no support and power to pursue corporate and/or strategic initiatives. They therefore have less potential to add value by means of creative sourcing strategies (Paulraj, Chen, and Flynn 2006). We thus advise managers and team leaders to carefully assess the potential for using a creative team approach in their sourcing projects against their organization’s respective purchasing maturity.

Limitations and Suggestions for Further Research

Every study should be assessed in light of its limitations; these are outlined as well as discussed in terms of future research opportunities in this section. The sampling method we applied during the item reduction stage of the scale development process might evoke some discussion. The 120 individual respondents sampled for the pilot study, as well as the sample of 52 sourcing teams obtained to establish psychometric scale properties, constitute a heterogeneous crowd. Despite their affiliation with the sourcing profession and similar professional backgrounds, each respondent faced a distinct working environment, reflecting both industry-specific and company-specific dynamics. To guarantee the robustness of our developed TCC scale, additional research should validate the proposed construct using additional, large samples drawn from sourcing teams in a variety of companies and industries.
The pilot study and survey included constructs to establish discriminant and convergent validity. Conceptual distinctness, informed by empirical evidence of construct validity (see Hair et al. 2010; Hu and Bentler 1999), is desirable for establishing the TCC scale, so we hope further research seeks to delineate this construct from other, seemingly similar constructs that tap behavioural aspects of sourcing, such as continuous improvement or organizational learning.

We did not account for the heterogeneity across different types of sourcing teams. In addition to installing cross-functional sourcing teams, companies increasingly extend beyond their organizational boundaries to tap the capabilities of their suppliers and fulfill their sourcing goals. Sourcing professionals also collaborate more frequently with colleagues and suppliers in virtual teams, using all sorts of social media channels. The contextual factors that govern creative performance in these varied team settings differ inherently. In sourcing teams, for instance, team leaders are confronted with the challenge of uniting team members from diverse functional backgrounds, channeling their efforts, and balancing the interests of several organizational stakeholders. Buyers-supplier innovation teams in turn are subject to contextual influences at both, the buyer and supplier organization (see e.g., Wagner and Hoegl 2006). Further research should assess systematically the applicability of the TCC scale across different team contexts.

Finally, it is of academic and managerial interest to hypothesize and empirically assess a set of distinct, context-specific antecedents to determine the influence of, for instance, leadership behaviour and team member capabilities on TCC. Positioning the TCC construct as a focal, mediating construct within a conceptual model might provide a more fine-grained investigation and direct the appropriate management of teams’ creative performance across distinct contexts within the Purchasing and Supply Management domain.
CHAPTER 3

Procurement’s Creative Advantage: Team Creativity Climate as Driver of Sourcing Team Performance

In times of increasingly complex and challenging supply networks, planning and execution of sourcing projects is frequently delegated to teams. As leading-edge companies pioneer with non-traditional strategies, sourcing teams must find ways to unleash their collective creativity. Drawing on work-unit climate literature, this study investigates whether team creativity climate (TCC) – defined as members’ shared perceptions of policies, procedures, practices they pursue to attain desired outcomes in creative ways – is a key driver of sourcing performance. Using survey data from 52 sourcing teams, TCC is introduced and validated as the focal mediator between managerially relevant antecedents and key performance outcomes. TCC partially mediates effects of members’ creative capabilities on creative performance; this effect is weaker in presence of highly facilitative leaders. TCC is, to a lesser extent, driven by task-related capabilities; especially in functionally diverse teams. Findings are discussed vis-à-vis recent sourcing team effectiveness literature and potential future research avenues are suggested.

The author of this dissertation (1st author) was the main researcher and responsible for the majority of work in this chapter. This research was conducted in collaboration with Rozemeijer, F.A. (2nd author), de Ruyter, J.C. (3rd author), and de Jong, A.D. (4th author). Promotors and co-promotors served as sparring partners and their feedback was implemented during several revision rounds.

Earlier versions of this chapter were presented at the 2015 WION meeting (Lunteren, The Netherlands) and at the IPSERA 2015 Conference (Amsterdam, The Netherlands). The authors would like to thank discussants and reviewers for their feedback to further improve the manuscript and Tim Hilken for his assistance with the data collection.
INTRODUCTION

Confronted with intensifying competition and more complex supply networks, CPOs face the challenge of formulating sourcing strategies aimed at creating value for the business and its stakeholders (KPMG 2015; Trent and Monczka 2005). Despite their hard-earned reputation as viable, strategic source of competitive advantage (Hartmann, Kerkfeld and Henke, 2012), purchasers cannot act alone to formulate these sourcing strategies (Chapman, Dempsey, Ramsdell, and Reopel 1997). As the implications of sourcing-related problems effect and pervade the entire organization (Cousins and Spekman 2003; Zheng, Knight, Harland, Humby, and James 2007), purchasers increasingly need to collaborate with colleagues from diverse functions in so-called sourcing teams (Driedonks, Gevers, and van Weele 2014). The purpose of these teams is to pool relevant and specific functional knowledge (e.g., Purchasing, Manufacturing, Marketing, R&D, Finance) for devising well-informed and competitive sourcing strategies (Englyst et al. 2008). As this provides team members with a broader, more holistic view of the sourcing situation, they can seek synergies across business units and draw on diverse knowledge bases to craft strategies that reduce costs, mitigate risk, and increase value (Fuchs, Pais, and Shulam 2013; Rozemeijer, van Weele, and Weggeman 2003).

However, a recent survey of global buying companies reveals that nearly 60% of sourcing team initiatives fail to deliver such results (Deloitte 2014). A possible reason for this is sourcing team members’ overreliance on traditional sourcing procedures and sourcing processes. Moreover, different priorities, functional conflict and diverging perspectives oftentimes prevent team members from developing a shared understanding for effectively working together as a team (Carr and Pearson 2002; Moses and Ahlstrom 2008). Instead, sourcing participants must be capable of overcoming traditional functional borders by creatively envisioning alternate scenarios, recognizing opportunities, and taking pre-emptive decisions to capitalize on these opportunities (Giunipero et al. 2005; Handfield, Petersen, Cousins, and Lawson 2009). In an attempt to realize this, managers should use cross-functional staffing and appoint the right team leaders, inviting sourcing participants to develop a shared understanding of collectively, creatively formulate sourcing strategies (Driedonks et al. 2010). Given managerial and academic interest in the topic, the objective of this study is to decipher the collective, creative process of sourcing teams during sourcing strategy formation. The identification of capabilities conducive to this process and insight into the effectiveness of managerial actions contributes to a better understanding and management of sourcing teams.

The notion of work-unit climates has emerged as a theoretical lens for explaining how members of a work team develop a shared understanding of “the way we do things around here” (Schneider, Brief, and Guzzo 1996, p. 12). Climate research examines how peoples’ perceptions of, or experiences in, the immediate work environment influence work group’s creative endeavors (see Hunter, Bedell, and Mumford 2007). Especially facet-specific climates, directed at a specific goal or activity (e.g., creativity)
and at a specific level (e.g., team), provide highly proximal measures of the sensemaking process in work teams (Zohar and Luria 2004; Zohar and Tenne-Gazit 2008). In this study we adopt creativity as the focal facet of work-unit climate to account for the heightened, collective solution-finding demands in sourcing teams during strategy formation (Giunipero, Handfield, and Eltantawy 2006). We thereby aim to contribute to literature in the following ways.

First, we introduce and conceptualize the focal construct of this study, Team Creativity Climate (TCC). The construct serves as a proxy for the process by which individuals arrive at a shared understanding of how to creatively develop sourcing strategies together as a team. Faced with competitive sourcing environments, complex and interdependent supply networks, demands to source sustainably and create value, sourcing teams cannot rely on the usual sourcing processes and procedures (Ellis, Henry, and Shockley 2010; Wu and Pagell 2011). They need to prioritize value-generating activities such as challenging or redefining specifications, redefining contracts and supplier relationships, exploring non-traditional markets, and reducing total cost of ownership instead of prices (Fuchs et al. 2013). Yet, it can be difficult to align individual team members as they “move into different directions” while pursuing team assignments (Trent 1996, p.32). TCC can add to our understanding of the process through which individual team members overcome different interests, priorities, skills and views to elicit collective, creative action (Tassabehji and Moorehouse 2008).

Second, we position TCC into a conceptual framework mediating between member capabilities and key performance outcomes. The challenge of sourcing teams lies in the blending of diverse knowledge bases in novel ways to reduce costs instead of price. As a result, skills relating to the recombination of knowledge and closer integration with other business functions become more important (see e.g., Faes, Knight, and Matthyssens 2001; Giunipero et al. 2005). Traditional sourcing knowledge (e.g. contracting, negotiation, market knowledge) must be complemented with creative capabilities to enable value-enhancing sourcing (Giunipero and Pearcy 2000). Adding to the debate on the relative importance of creative problem-solving skills, we include task-related and creative capabilities as antecedents to TCC. Next, we propose TCC as a key predictor of sourcing performance. Leading-edge sourcing teams generate value by finding and delivering new ways to reduce costs of purchased materials and services (Fuchs et al. 2013). As to demonstrate that TCC directs and channels team member efforts towards that end, we capture creative performance of strategies in terms of their novelty, relevance, feasibility, and specificity. The extent to which strategies are creative will mediate between team climate and sourcing performance.

Third, we introduce interaction terms to account for the heterogeneity frequently associated with sourcing team effectiveness (Driedonks et al. 2010). Correct staffing and right leadership are essential for team performance in a sourcing context. The presence of multiple functions, for instance, has been argued to either improve team performance by means of increasing the availability of information, or jeopardize team per-
formance altogether due to overload and stress (see e.g., Trent and Monczka 1994). Leader behaviour is pertinent to effectively aligning collective efforts and coordinating capabilities in sourcing teams (Englyst et al. 2008), but empirical evidence is scattered. Tasks requiring intellectual stimulation and knowledge generation demand facilitative styles to ignite a creativity-stimulating atmosphere among employees (see e.g. Englyst et al. 2008; Jung, Chow, and Wu 2003). We expect both of these contextual variables to amplify the hypothesized, positive main effects between antecedents and team climate.

We proceed with an introduction of the study’s theoretical foundation. Embedded in extant literature on work-unit climates and sourcing teams, we build a conceptual framework and formulate hypotheses. After reporting results of an empirical study involving 52 sourcing teams, we conclude with a discussion of theoretical and managerial implications.

CONCEPTUAL BACKGROUND

Team Creativity Climate

Researchers have conceptualized climate constructs to capture the dynamics originating from individual and/or collective action within teams or organization and that in turn impact performance (e.g., see Anderson and West 1998; Baer and Frese 2003; Ekvall 1996). The employment of climate constructs has generally proven useful and valuable when attempting to capture team behavioural phenomena that emerge from individual differences in ability, skill and predisposition between team members (e.g., de Jong et al. 2004; de Ruyter, de Jong, and Wetzels 2009). Climate constructs have been employed to explain how individual team members develop a shared understanding of the relevant behaviours and practices they can expect to be rewarded for. Especially facet-specific climates have been shown to better predict performance outcomes compared to multifaceted or global organizational climates (Zohar and Tenne-Gazit 2008). Thus, in the attempt to provide an explanation for why some teams are more successful than others in developing sourcing strategies, this study implements the previously developed and validated Team Creativity Climate (TCC) scale (see Kiratli, Rozemeijer, Hilken, de Ruyter, and de Jong 2016). Adopting creativity as the focal facet of work-unit climate, TCC is defined as team members’ shared perceptions of their joint policies, procedures, and practices with respect to developing creative sourcing strategies. In this study, the TCC construct is introduced as the ‘missing link’ between a set of team member capabilities and sourcing team performance. In search for relevant conceptual drivers to creative team functioning in a sourcing context, we reviewed adjacent literature in organizational behaviour and corroborated relevant capabilities with those found in sourcing literature. Below we outline antecedents to creative team climates and elucidate the moderating role of two organizational contingencies that have an
influence on team dynamics; functional team diversity and facilitative leader behaviour (see Figure 3.1).

**Figure 3.1** Conceptual Framework

### HYPOTHESES DEVELOPMENT

**Task-relevant Capabilities**

It is essential that sourcing teams are staffed with individuals possessing relevant experience, knowledge and talent for successfully completing the sourcing project at hand (Englyst et al. 2008; Faes et al. 2001). Relevant task expertise can be sourcing process-specific (e.g., contracting, negotiation skills), sourcing category-specific (e.g. supply market, technology) – or located outside the sourcing domain involving expertise from R&D, Manufacturing, Finance or Marketing. Individual team members’ task preparation and accumulated experience through, for instance, previous education, formal training, and job experience on sourcing— as well as non-sourcing related projects are relevant resources to perform the team’s assignment (Handfield, Monczka, Giunipero, Patterson, Director, and Shirley 2009). Ideally, members contribute knowledge and experience relating directly to their expected role on the team and formulate ideas according to their functional specialty (Trent 1998). This promotes the unfolding of creative team climates in two ways. First, when individual team members possess relevant task expertise, they might feel more inclined or better equipped to constructively interact with other team members. The underlying reason to do so might stem from heightened levels of perceived self-efficacy that one can effectively contribute own knowledge to the team. Self-efficacy has been argued to trigger initiating behaviours and persistence in the face of obstacles so that employees seek more interaction and dialog with team members (Bandura 1997). Second, high levels of relevant task expertise might signal to team members that they are able to successfully complete the sourcing project, initiating them to take action on problems and proactively seek each other out for developing novel
solutions to these (Kirkman and Rosen 1999). Altogether, we argue that in presence of
task-related capabilities, team members will be able to exchange, integrate and recom-
bine knowledge, expertise, and talent for collectively finding a creative solution. Hence,

*Hypothesis 1:* The more task-related capabilities team members possess, the
higher the team creativity climate.

*Creative Capabilities*

The shift from an overly transactional-oriented to increasingly value-oriented sourcing is
reflected in the changing skill sets of sourcing participants (Cousins, Lawson, and Squire
2006; Faes et al. 2001). The traditional competence profile has been augmented with
skills such as problem-solving, creativity, relationship building, empathy towards stake-
holders, and communication (see e.g., Cousins et al. 2006; Kolchin and Giunipero 1993;
Mohr and Spekman 1994). Such competences have become especially important with
the proliferation of sourcing teams, employed as a vehicle to pool and locate relevant
problem-solving capabilities where they are needed to develop effective solutions
(Englyst et al. 2008). Sourcing teams are increasingly commissioned to develop creative
solutions to problems that are sourcing-related but carry business-wide implications
(Cousins and Spekman 2003). In order to make value-adding and strategic contributions
in a complex and volatile world, sourcing managers need a flexible skill set resembling
that of an entrepreneur, including creativity (Giunipero et al. 2005; Tassabehji and
Moorhouse 2008). Individuals with a creative orientation can create value because they
recognize opportunities that other persons do not see and are able to envision alternate
sourcing scenarios (Giunipero et al. 2005; Handfield et al. 2009). The ability to adapt
traditional tools and techniques is indispensable to find new ways of driving costs down,
optimizing working capital or bridging resource shortage (Hult, Ferrell, Hurley, and Giuni-
pero 2000). This makes creativity a central and necessary capability in sourcing teams.
The creative combination of knowledge and skills as well as the adoption of something
different can result in “never-before-considered” solutions (Giunipero et al. 2005; Rob-
erts 2002). Team members capable of deviating from routine, conservative, and fact-
based thinking are better equipped to actively participate in the team’s creative process
(Choi, Anderson, and Veillette 2009). As a result, they will engage in behaviours conduc-
tive to creativity, stimulating development of a creative team climate. Hence,

*Hypothesis 2:* The more creative capabilities team members possess, the higher
the team creativity climate.

*Performance Outcomes*

Creativity literature distinguishes between creative behaviour and subsequent creative
output or performance (Amabile 1996; Montag, Maertz, and Baer 2012). Creative per-
Performance has commonly been operationalized along two dimensions: novelty (outputs are new and different) and meaningfulness (outputs are appropriate and useful for target audience) (e.g., Carson 2007; Im, Montoya, and Workman 2013). The objective of sourcing teams is to find new and relevant ways to increase margins without reducing prices (Fuchs et al. 2013). Renegotiate current contracts, optimizing logistics and inventory management, reviewing payment terms, collaborating with suppliers on reducing total cost of ownership (TCO) or even outsourcing certain activities to suppliers can provide valuable means to change the cost structure of supply, lower working capital or create value for the company. If such sourcing strategies, however, are not concrete enough or not implementable given existing resources, operational constraints or current business conditions, they do not contribute to bottom-line results, and are hence useless (O’Brien 2012). Consequently, specificity (outputs are described in detail) and feasibility (outputs can be implemented with existing resources and skill) are assessed as well (Kim and Wilemon 2002). The introduction of adequate performance measures capturing the creative potential of sourcing teams for generating value is essential for three specific reasons. First, the development of valid and reliable measurement lies at the heart of rigorous and relevant research for truly advancing our understanding of sourcing team behaviour (Van Weele and Van Raaij 2014). Second, if sourcing teams are to receive fair rewards and recognition for their new role of developing value-based sourcing strategies in creative ways, KPIs should specify what that exactly entails. Denoting an idea as creative when it is novel, relevant, feasible, and specific clearly provides team members with an idea of what is expected of them. In that way creative sourcing performance becomes not only measurable, but also visible and communicable. Third, in line with the saying “you get what you measure”, the manner in which creative performance is defined and measured serves as a signal to sourcing teams as to what kind of behaviour is expected from them, eventually directing and channeling their efforts towards that goal. Sourcing strategies are notorious for not being fully implemented due to, for instance, low contract compliance and resistance of stakeholders due to a lack of detail or low perceived levels of realizability of the strategy. In order for solutions to also be feasible in terms of available resources and specific in terms of clear action plans, individual team members should be strongly connected to the stakeholders in their organization. As the notion of team creativity climate implies a close connection with the immediate internal stakeholders, TCC can be expected to also encourage the feasibility and specificity of proposed solutions. Consistent with extant theorizing (Si and Wei 2012), we expect TCC to positively impact the creative performance of sourcing strategies in terms of their novelty, meaningfulness, feasibility, and specificity. Therefore,

Hypothesis 3: When team creativity climate is high, creative performance of sourcing strategies will be higher.
Sourcing strategies are evidently not solely assessed on the extent to which they are ground-breaking, non-traditional and creative. In order to account for the contribution of sourcing teams to the actual bottom-line of a company by means of a creative problem-solving approach, we also investigate whether resulting sourcing solutions have the potential to improve the bottom-line. Following Purchasing and Supply Management (P/SM) scholars, we define sourcing performance as the extent to which costs are reduced as well as avoided, working capital is improved and strategy implementation is fast (see e.g. Wouter, Anderson, and Wynstra 2005). Answering the ultimate question of whether creativity pays off, we account for a direct positive impact of creative sourcing solutions on sourcing performance. Hence,

Hypothesis 4: When sourcing strategies are creative, sourcing performance will be higher.

Facilitative Leader Behaviour as Moderator

Team leader behaviour is pertinent for sourcing team success (Trent, 1996). Collective, creative strategy formulation is a relatively unstructured, complex task with unclear outcomes (Englyst et al. 2008). In such situations, leaders must show consideration for team member concerns and involve them in decision-making processes in order to stimulate creative, cognitive processes. With relevant knowledge for solving contemporary sourcing challenges often coming from outside the purchasing function, leaders need to be able to develop a shared vision among diverse team members (Epstein 2015; Keller 2006). Especially the leadership style known as facilitative behaviour has been shown to fuel the emergence of creative team climates (Jung et al. 2003; Sarin and McDermott 2006). Facilitative leader behaviour is defined as the degree to which the team leader is considered friendly, approachable, and democratic and has two sub-dimensions. Consideration is the degree to which a team leader demonstrates concern and interest for the well-being of team members. Participation is the degree to which the team leader invites members’ active involvement in the decision-making. This form of leadership behaviour has been argued to encourage trust and collaboration among team members, aspects that are both conducive to integrative problem-solving (Norrgren and Schaller 1999; Sarin and McDermott 2003). Facilitative team leaders influence the occurrence of creative team climates in two specific ways. First, the supportive and coaching-oriented behaviour of the leader creates a safe team environment in which team members are encouraged to openly speak up, share their knowledge, analyze others’ ideas, and learn from their errors (Edmondson 1999). Such a nurturing team environment encourages team members to take risks, deviate from routine ways of thinking and explore new solution paths (Norrgren and Schaller 1999). Second, empowering employees and involving them in decision-making is an effective way to direct the team members’ attention to attainment of a common goal or activity (Schneider et
This increases the focus on mutual needs, aspirations, and values (Englyst et al. 2008), thereby fueling the development of a shared vision among all team members (Trent 1996). Thus, beyond the direct impact of leader behaviour on team climates (Zohar and Tenne-Gazit 2008), we argue that facilitative leader behaviours catalyze the translation of member capabilities into a creative team climate. Hence,

**Hypothesis 5:** When leaders are facilitative, the positive effects of (a) task-related capabilities and (b) creative capabilities on team creativity climate will be stronger.

**Functional Diversity as Moderator**

The move towards a cross-functional approach in sourcing is driven by increasing awareness of the purchasing function’s potential influence and impact on the firm’s strategic activities and position (Rozemeijer 2008). Despite recent advancements for understanding success factors of sourcing team performance, the issue of cross-functionality in sourcing teams remains contested (Moses and Ahlstrom 2008). The initial but ambiguous evidence for the positive influence of functional diversity provided by Driedonks et al. (2010, 2014) needs to be complemented with additional empirical investigation. Scholars generally regard it as beneficial when team members differ in job- or task-related attributes (Shalley and Gilson 2004; Woodman, Sawyer, and Griffin 1993). Heterogeneity of team members with respect to their functional background improves team performance by means of three mechanisms. First, as a team is staffed with employees from diverse functions, communication and interaction between and across functional boundaries needed for the successful completion of a task is facilitated (Driedonks et al. 2010, 2014). Second, more functional diversity implies a larger repertoire of skills, expertise and information. This enables effective, complementary recombination of knowledge and expertise to solve complex problems (Hülßheger, Anderson, and Salgado 2009). Third, as individual team members are exposed to a variety of functional backgrounds and perspectives, they gain a more holistic understanding of the sourcing problem (Moses and Ahlstrom 2008). This in turn stimulates team members’ creativity-related cognitive processes (Perry-Smith 2006). Against this background, we argue that the presence of multiple perspectives positively influences team performance during sourcing assignments requiring a collective, creative problem-solving approach. Hence,

**Hypothesis 6:** When teams are functionally diverse, the positive effects of (a) task-related capabilities and (b) creative capabilities on team creativity climate will be stronger.
Mediation Effects

In addition to the hypotheses specified above, a major contribution of this study lies in the introduction of TCC as a focal mediator between managerially relevant antecedents and sourcing team performance. Triggered by the increasing salience of ‘soft’ and behavioural aspects in determining sourcing team effectiveness (see e.g. Driedonks et al. 2014; Fawcett, Magnan, and McCarter 2008; Zheng et al. 2007), we propose that team climates conducive to creativity help sourcing team members in translating their capabilities into a shared understanding of those behaviours that are needed for collectively developing effective and ground-breaking sourcing strategies. Recent advocates of studying and understanding various organizational processes through a climate lens are Schneider et al. (2013). In their eyes, the change from global climates to focused climates, directed at a specific strategic outcome or facet, has made climate constructs more accessible and valuable to practitioners. Typically related to a specific context, facet-specific climates improve our understanding of the relevant practices and behaviours that will serve as interventions to enhance performance in that specific context (Burke, Borucki, and Kaufman 2002). In the effort to fill a void in prior theoretical and empirical support for such a relationship in sourcing team effectiveness literature, we propose the following formal hypothesis:

Hypothesis 7: Team creativity climate will mediate the relationship between a) task-related capabilities, b) creative capabilities and creative performance of sourcing strategies.

Last but not least, this paper starts from the recognition that effective sourcing strategies go beyond traditional cost-saving initiatives. Given the competitive pressures and complex supply networks that companies are confronted with, more creativity is needed from sourcing teams. Sourcing strategies need to be novel, relevant, specific and feasible in order to truly contribute to the bottom-line. If CPOs and purchasing professionals want to be recognized as strategic business partners, their contribution in terms of the value they create for the company needs to be made visible. Hence, in order to empirically test the extent to which creatively designed sourcing strategies translate into sourcing performance (i.e., cost reduction, improved working capital, speed of implementation), we propose the following and final formal hypothesis:

Hypothesis 8: Creative performance of sourcing strategies will mediate the relationship between team creativity climate and sourcing performance.
METHODOLOGY

Research Setting and Data Collection

Sourcing team members and leaders in four multinational companies ranging in size between 23,000 and 92,000 employees were invited to participate in the survey. An online survey was administered to a total of 367 individuals from 52 teams working on sourcing assignments across a range of industries (oil and gas, chemicals, digital printing, construction). In order to improve response rate, we purposefully solicited the companies’ senior management for participation in our research, guaranteed confidentiality of team scores and contacted team leaders to inform their team members about the research. Respondents then received a personalized email with clear instructions and a link to the online survey. Three reminders were sent before thanking respondents for their participation and announcing dissemination of results at a later stage. This procedure resulted in a very high response rate of 96.8 %. In order to improve interpretability of results, study results were disseminated to purchasing managers of the participating companies and then discussed in workshops together with invited key stakeholders.

Sample Description

The final sample included 52 teams and was composed of 237 men and 68 women (team members and team leaders) with an average age of 43.8 (SD=9.7). Average team size, including the team leader, was 5.87 (range = 3–12) and average response rate per team was 86% (range = 50–100%). Respondents had an average employment term of 14 years (SD=12) while their general work experience averaged 19.3 years (SD=10.8). The majority of team members held a Purchasing position (56%) followed by Operations (19%), Support functions (7%), R&D (6%), Finance and Accounting (5%), IT (3%), and a range of other functions including Marketing (4%). Their team membership was, on average, 25 months (SD=36.5) and team members dedicated on average 25% of their work time to the team assignment. The majority of team leaders was male (77%) with an average age of 43.8 (SD=9.6). Team leaders were on average employed for 10.3 years (SD=8.3) and their general work experience averaged 20.1 years (SD=7.9). A large majority of team leaders held a purchasing position (75%), only a quarter of leaders were working in non-purchasing related areas.
## Table 3.1 Measures, Reliability, and Convergent Validity (n=253)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Items</th>
<th>SL</th>
<th>CR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Creative Capabilities</strong> <em>Amabile (1983), Choi et al. (2009)</em></td>
<td>In our team we are good at coming up with original ideas.</td>
<td>.79</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In our team we are good at perceiving problems.</td>
<td>.58</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In our team we are good at intuitive thinking.</td>
<td>.73</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In our team we are good at using our imagination.</td>
<td>.81</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In our team we are good at visualizing our thoughts.</td>
<td>.77</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In our team we are good at giving different responses than expected.</td>
<td>.66</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In our team we are good at reworking ideas.</td>
<td>.70</td>
<td></td>
</tr>
<tr>
<td><strong>Task-related Capabilities</strong> <em>Amabile et al. (1996)</em></td>
<td>In our team we are confident about our ability to work on projects like these.</td>
<td>.81</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In our team we have competencies applicable to projects like these.</td>
<td>.77</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In our team we are self-assured about our capabilities to perform work activities for this project.</td>
<td>.78</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In our team we have mastered the technical skills necessary for projects like these.</td>
<td>.72</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In our team we have factual knowledge relevant for projects like these.</td>
<td>.68</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In our team we have routine in solving problems in projects like these.</td>
<td>.61</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In our team we have relevant talent contributing to the success of projects like these.</td>
<td>.81</td>
<td></td>
</tr>
<tr>
<td><strong>Facilitative Leader Behaviour</strong> <em>Sarin and McDermott (2006)</em></td>
<td>Participation: Our team leader is receptive to team members’ opinions on how the team should function.</td>
<td>.86</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Team members can influence decisions of our team leader regarding things concerning the team.</td>
<td>.77</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Our team leader frequently asks the team members for their opinion when a problem comes up that involves the project.</td>
<td>.83</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Our team leader frequently makes decisions concerning the team after consulting the team members.</td>
<td>.77</td>
<td></td>
</tr>
<tr>
<td><strong>Consideration</strong></td>
<td>Our team leader is friendly and approachable.</td>
<td>.76</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Our team leader gives advance notice of changes.</td>
<td>.76</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Our team leader makes our job pleasant.</td>
<td>.83</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Our team leader pays attention to the small things that make it pleasant to be a member of this team.</td>
<td>.75</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Our team leader treats all members of the team as his/her equal.</td>
<td>.74</td>
<td></td>
</tr>
<tr>
<td><strong>Team Creativity Climate</strong></td>
<td>Team members are open to each other’s views and ideas.</td>
<td>.76</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In our team we strive to think across departmental boundaries.</td>
<td>.70</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In our team we actively seek out each other for constructive discussions.</td>
<td>.78</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Our team is encouraged to try new ways of doing things.</td>
<td>.69</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In our team we are comfortable with exploring unfamiliar ideas and unknown perspectives.</td>
<td>.69</td>
<td></td>
</tr>
</tbody>
</table>
In our team we openly share our thoughts without fear of rejection. \( .74 \)
Building on each other’s ideas is an integral part of how we work in our team. \( .80 \)
In our team every team member’s contribution is taken seriously. \( .72 \)
In our team we promote behaviours that are conducive towards a trustful environment. \( .77 \)

**Creative Performance** Im et al. (2013), Kim and Wilemon (2002)

Compared to other teams, our team was able to generate solutions that

| Novelty | ...are really “out of the ordinary”. \( .92 \) |
| Feasibility | ...can be easily implemented. \( .69 \) |
| Relevance | ...are applicable to the stated problem. \( .91 \) |
| Specificity | ...are worked out in detail. \( .71 \) |

**Sourcing Performance** (adapted from Wouters et al. 2005)

Compared to other teams, the team was able to...

| …realize above average cost reductions. \( .81 \) |
| …realize above average cost avoidance. \( .84 \) |
| …optimize working capital above average. \( .83 \) |
| …deliver their creative solutions quicker than average. \( .92 \) |
| …implement their solutions quicker than average. \( .96 \) |

Notes: SL = standardized loadings, CR = composite reliability, AVE = average variance extracted.

*Based on Team Leader Ratings

**Measurement Items**

In order to measure all constructs of interest, we adopted items from existing measurement scales where possible (see Table 3.1). Blau’s (1977) index of heterogeneity was calculated to measure functional diversity: heterogeneity = \( 1 - \sum p^2i \), where \( p \) is the proportion of team members occupying a particular function, and \( i \) is the number of different functions represented. Grouping respondents according to their indicated job title revealed that seven main functions were represented in the sample; minor and scattered functions were pooled into one category (i.e., Purchasing, Operations, IT, R&D, Marketing, Finance and Accounting, Support Function, Other functions). With eight categories \( (i=8) \) the Blau index can take on values from 0 to 0.875 whereby an
The index of 0.875 is indicative of maximum functional diversity (i.e., all functions are equally represented). The TCC measurement scale was conceptualized and validated by the authors following established scale development procedures (Kiratli et al. 2016). All items were measured on a 5-point Likert scale ranging from 1=strongly disagree to 5=strongly agree and showed satisfactory reliability (DeVellis, 1991) as well as discriminant validity (Fornell and Larcker 1981) (Table 3.2). In order to check for common method bias, we performed Harman’s (1976) single-factor. The test results showed that a single factor did not account for the majority of the variance explained (max. 34.66%), thus indicating that common method bias was not a concern in our study (Podsakoff et al. 2003). As a safeguard against common method bias we obtained our measures for variables of interest from different sources; ratings of drivers, moderators, team climate and creative performance were obtained from team members while global ratings of the teams’ business performance were provided by the respective team leader. Team size, team tenure as well as average percentage of work time respondents spend in their respective project team served as control variables.

**Aggregation Justification**

The conceptualization as well as operationalization of most constructs in this study complies with the referent-shift consensus model by Chan (1998). Aggregation of referent-shift items is conceptually appropriate because they refer to the level (i.e. the team) to which individual responses will be aggregated (Le Breton and Senter 2008). With respect to the team climate and leader behaviour variable, the approach is justified as the constructs are conceptualized and operationalized as team members’ shared perceptions of the team climate and team leader, respectively. For the antecedent variables the assumption is that individual-level creative capabilities and task-related capabilities are important resources for the team such that their aggregated form simply serves as indicator of the level of these resources within the team (Pagell and LePine 2002). We establish empirical evidence for the team-level homogeneity in individual ratings within teams by calculating the $R_{wg}$ statistic as suggested by James et al. (1984). As more than 99% of computed $R_{wg}$ values (Median $R_{wg} = 0.96$) exceed 0.70, respondents’ ratings within groups are highly consistent such that their ratings are interchangeable (James 1982; Schneider et al. 2013). This justifies aggregation to the team-level and enables detection of group-level relationships.
Table 3.2 Descriptive Statistics and Discriminant Validity (n=52)

<table>
<thead>
<tr>
<th></th>
<th>M (SD)</th>
<th>Cronbach α</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Creative Capabilities</td>
<td>3.67 (.37)</td>
<td>.85</td>
<td><strong>0.81</strong></td>
<td>.85</td>
<td>.81</td>
<td>.82</td>
<td>.82</td>
<td>.82</td>
<td>.82</td>
</tr>
<tr>
<td>2. Task-related Capabilities</td>
<td>4.00 (.29)</td>
<td>.86</td>
<td>.63*</td>
<td>.63*</td>
<td>.63*</td>
<td>.82</td>
<td>.82</td>
<td>.82</td>
<td>.82</td>
</tr>
<tr>
<td>3. Facilitative Leader Behaviour</td>
<td>3.95 (.37)</td>
<td>.92</td>
<td>.50*</td>
<td>.49*</td>
<td>.63*</td>
<td>.50*</td>
<td>.50*</td>
<td>.50*</td>
<td>.50*</td>
</tr>
<tr>
<td>4. Functional Diversity</td>
<td>0.38 (.28)</td>
<td>n.a.</td>
<td>-.24**</td>
<td>-.24**</td>
<td>-.06n.s.</td>
<td>-.24**</td>
<td>-.24**</td>
<td>-.24**</td>
<td>-.24**</td>
</tr>
<tr>
<td>5. Team Creativity Climate</td>
<td>3.98 (.27)</td>
<td>.89</td>
<td>.69*</td>
<td>.69*</td>
<td>.69*</td>
<td>.69*</td>
<td>.69*</td>
<td>.69*</td>
<td>.69*</td>
</tr>
<tr>
<td>6. Creative Performance</td>
<td>3.58 (.38)</td>
<td>.92</td>
<td>.75*</td>
<td>.75*</td>
<td>.75*</td>
<td>.75*</td>
<td>.75*</td>
<td>.75*</td>
<td>.75*</td>
</tr>
<tr>
<td>7. Sourcing Performance</td>
<td>3.45 (.64)</td>
<td>.78</td>
<td>.63*</td>
<td>.63*</td>
<td>.63*</td>
<td>.63*</td>
<td>.63*</td>
<td>.63*</td>
<td>.63*</td>
</tr>
</tbody>
</table>

The square roots of AVE (VAVE) appear on the diagonal in bold.
** p < 0.01 * p < 0.05 # p < .10

DATA ANALYSES

Given the restricted degrees of freedom all hypotheses were tested by estimating three sets of models using regression analyses (see Boone and Hendriks 2009). Variables were added in a stepwise fashion to allow detailed observation of model fit improvement with each entered variable. In the first model predicting \(TCC\), only the control variables were added in a first step. Then the independent variables were added through forced entry in a second step. The interaction effects were computed using mean-centred predictor variables (Aiken, West, and Reno 1991) and entered in a third step. In the second model predicting \(Creative Performance\), the control variables were introduced in the first step, followed by the independent variables in a second step. In a third model, \(Sourcing Performance\) was predicted by only including the control variables in a first step and then adding \(Creative Performance\) and \(TCC\) through forced entry in a second step. The hypothesized indirect effects were tested using bootstrapping procedures suggested by Preacher et al. (2005) and Zhao et al. (2010). Modern mediation analysis requires the explicit estimation of indirect effects by means of inferential tests (Muller, Judd, and Yzerbyt 2005). The PROCESS macro developed by Hayes (2013) is a well-accepted method to do so. It facilitates the construction of bootstrap confidence intervals for statistical inference about indirect effects and conveniently reports the strength of the indirect effect. This simplifies readability of results and facilitates translation into practical implications (see e.g., Gibbs, Ellison, and Lai 2011; Popan, Kenworthy, Frame, Lyons, and Snuggs 2010; Zhou, Hirst, and Shipton 2012). For the sake of conceptual integrity and consistency in our approach to analysis, we included control and independent variables as covariates.
Hypothesis Testing

Results confirm the conceptual model providing support for most of the eight hypothesized relationships (see Tables 3.3 to 3.5). Both, Task-related Capabilities ($\beta = 0.20$, $p<0.05$) and Creative Capabilities ($\beta = 0.34$, $p<0.05$) have a positive impact on TCC, providing support for Hypothesis 1 and 2. Next, TCC is positively related to the dependent variable Creative Performance ($\beta = 0.42$, $p<0.05$), which in turn is strongly and positively associated with Sourcing Performance ($\beta = 0.59$, $p<0.05$), providing support for Hypothesis 3 and 4, respectively. As expected, higher degrees of Functional diversity strengthen the positive impact of Task-related Capabilities on TCC ($\beta = 0.92$, $p<0.05$), indicating support for Hypothesis 6a. Counter expectations Facilitative Leader Behaviour attenuates the relationship between Creative Capabilities and TCC ($\beta = -0.45$, $p<0.05$). Despite a significant path coefficient, Hypothesis 5b is rejected as the direction of the effect was expected to be positive. No statistical support was found for the remaining interaction effects (H5a and H6b). As expected none of the control variables had a significant impact on the dependent variables of interest ($p>0.10$) in the complete model. Stepwise and forced entry of variables revealed that model fit – as indicated by incremental F statistic values ranging from 8.17 to 62.82 ($p<0.001$) for complete models – improved when adding variables to the regression. Final model fit was satisfactory for all dependent variables as indicated by relatively high adjusted $R^2$s ranging from 0.26 to 0.61 and satisfactory F statistics ranging from 4.61 to 14.13 ($p<0.001$) for all complete models.

In order to substantiate evidence that TCC and Creative Performance function as mediators (H7a, H7b, H8), regression results were complemented with simple mediation analysis using a bootstrapping approach (Shrout and Bolger 2002). This nonparametric
### Table 3.3 Regression Coefficients\textsuperscript{a,b} for Team Creativity Climate (n=52)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Team Creativity Climate</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Step 1</td>
<td>Step 2</td>
<td>Step 3</td>
</tr>
<tr>
<td>Team Tenure (years)</td>
<td>-.002* (.001)</td>
<td>-.001 n.s. (.001)</td>
<td>-.001 n.s. (.001)</td>
</tr>
<tr>
<td>Team Size</td>
<td>-.031 n.s. (.019)</td>
<td>-.015 n.s. (.014)</td>
<td>-.02 n.s. (.013)</td>
</tr>
<tr>
<td>Work Time (%)</td>
<td>.002 n.s. (.001)</td>
<td>-.001 n.s. (.001)</td>
<td>.00 n.s. (.001)</td>
</tr>
<tr>
<td>Task-related Capabilities H1</td>
<td>—</td>
<td>.23* (.12)</td>
<td>.20* (.12)</td>
</tr>
<tr>
<td>Creative Capabilities H2</td>
<td>—</td>
<td>.32** (.10)</td>
<td>.34** (.10)</td>
</tr>
<tr>
<td>Facilitative Leader Behaviour</td>
<td>—</td>
<td>.11* (.09)</td>
<td>.16* (.09)</td>
</tr>
<tr>
<td>Functional Diversity</td>
<td>—</td>
<td>-.05 n.s. (.13)</td>
<td>.01 n.s. (.12)</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>—</td>
<td>.22 n.s. (.38)</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>—</td>
<td>-.45* (.24)</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>—</td>
<td>.92* (.45)</td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>—</td>
<td>-.34 n.s. (.42)</td>
</tr>
<tr>
<td>F</td>
<td>2.3\textsuperscript{b}</td>
<td>8.48**</td>
<td>7.28**</td>
</tr>
<tr>
<td>F\textDelta</td>
<td>—</td>
<td>44**</td>
<td>8.17**</td>
</tr>
<tr>
<td>$f^2$</td>
<td>.07</td>
<td>1.04</td>
<td>1.38</td>
</tr>
<tr>
<td>Df</td>
<td>3, 47</td>
<td>7, 43</td>
<td>11, 39</td>
</tr>
<tr>
<td>SE</td>
<td>.26</td>
<td>.19</td>
<td>.18</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>.07</td>
<td>.51</td>
<td>.58</td>
</tr>
</tbody>
</table>

The numbers in parentheses are standard errors. a.Unstandardized coefficients are shown. b.Significance based on one-tailed alternatives ** p < 0.01 * p < 0.05 # p < 0.10

### Table 3.4 Regression Coefficients\textsuperscript{a,b} for Creative Performance (n=52)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Creative Performance</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Step 1</td>
<td>Step 2</td>
</tr>
<tr>
<td>Team Tenure (years)</td>
<td>-.002 n.s. (.002)</td>
<td>.000 n.s. (.001)</td>
</tr>
<tr>
<td>Team Size</td>
<td>-.030 n.s. (.026)</td>
<td>-.001 n.s. (.018)</td>
</tr>
<tr>
<td>Work Time (%)</td>
<td>.005** (.002)</td>
<td>.002 n.s. (.001)</td>
</tr>
<tr>
<td>Task-related Capabilities</td>
<td>—</td>
<td>.22\textsuperscript{b} (.16)</td>
</tr>
<tr>
<td>Creative Capabilities</td>
<td>—</td>
<td>.40** (.14)</td>
</tr>
<tr>
<td>Team Creativity Climate H3</td>
<td>—</td>
<td>.42* (.19)</td>
</tr>
<tr>
<td>F</td>
<td>3.1*</td>
<td>14.13**</td>
</tr>
<tr>
<td>F\textDelta</td>
<td>—</td>
<td>62.82**</td>
</tr>
<tr>
<td>$f^2$</td>
<td>.12</td>
<td>1.56</td>
</tr>
<tr>
<td>Df</td>
<td>3, 48</td>
<td>6, 45</td>
</tr>
<tr>
<td>SE</td>
<td>.36</td>
<td>.24</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>.11</td>
<td>.61</td>
</tr>
</tbody>
</table>

The numbers in parentheses are standard errors. a.Unstandardized coefficients are shown. b.Significance based on one-tailed alternatives ** p < 0.01 * p < 0.05 # p < 0.10
### Table 3.5 Regression Coefficients\(^a, b\) for Sourcing Performance (n=52)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Sourcing Performance</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Step 1</td>
<td>Step 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Team Tenure (years)</td>
<td>-0.004(^{n.s.}) (.003)</td>
<td>-0.001(^{n.s.}) (.003)</td>
<td></td>
</tr>
<tr>
<td>Team Size</td>
<td>-0.006(^{n.s.}) (.044)</td>
<td>0.025(^{n.s.}) (.040)</td>
<td></td>
</tr>
<tr>
<td>Work Time (%)</td>
<td>0.007(^*) (.003)</td>
<td>0.004(^*) (.003)</td>
<td></td>
</tr>
<tr>
<td>Team Creativity Climate</td>
<td>—</td>
<td>—</td>
<td>-0.41(^{n.s.}) (.41)</td>
</tr>
<tr>
<td>Creative Performance (\text{H4})</td>
<td>—</td>
<td>—</td>
<td>0.59(^*) (.30)</td>
</tr>
<tr>
<td>(F)</td>
<td>2.41(^*)</td>
<td>4.61**</td>
<td></td>
</tr>
<tr>
<td>(F\Delta)</td>
<td>—</td>
<td>—</td>
<td>11.92**</td>
</tr>
<tr>
<td>(f^2)</td>
<td>.09</td>
<td>.35</td>
<td></td>
</tr>
<tr>
<td>(Df)</td>
<td>3, 48</td>
<td>5, 46</td>
<td></td>
</tr>
<tr>
<td>(SE)</td>
<td>.61</td>
<td>.55</td>
<td></td>
</tr>
<tr>
<td>Adjusted (R^2)</td>
<td>.08</td>
<td>.26</td>
<td></td>
</tr>
</tbody>
</table>

The numbers in parentheses are standard errors. \(a\). Unstandardized coefficient are shown. \(b\). Significance based on one-tailed alternatives ** \(p < 0.01\) * \(p < 0.05\) \(^\#\) \(p < .10\)

The method is recommended over more traditional approaches (Baron and Kenny 1986; Sobel 1982) and provides more reliable results as it does not make biased assumptions about the distribution of the indirect effect (Gibbs et al. 2011) and does not require a statistically significant association between X and Y (Hayes 2013). We calculated indirect effects on the basis of 10,000 bootstrap resamples and determined significance by examining the bias-corrected and accelerated 90% confidence intervals (CIs) (Table 3.6). When they contain zero, no indirect effect exists; if they do not, the effect is considered significant (Hayes 2013). The indirect effect between \textit{Creative Capabilities} and \textit{Creative Performance} is positive (0.1574) and significant (Lower CI 0.0583, Upper CI 0.3245). As the direct effect of \textit{Creative Capabilities} on \textit{Creative Performance} is significant as well (\(\beta = 0.40, p<0.01\)), \textit{TCC} partially mediates the effect, in support of \(H7b\). The indirect effect between \textit{Task-related Capabilities} and \textit{Creative Performance} via \textit{TCC} is positive (0.1004) but insignificant (Lower CI -0.0003, Upper CI 0.2883), hence leading to the rejection of \(H7a\). Finally, the indirect effect between \textit{TCC} and \textit{Sourcing Performance} is very strong and positive (0.6219) and was also entirely above zero (0.2334 to 1.1070). \textit{Creative Performance} fully mediates the relationship at absence of a significant direct impact of \textit{TCC}, supporting \(H8\).
**Table 3.6** Bootstrapping Simple Mediation Effects (n=52)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Effect</th>
<th>SE</th>
<th>Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task-related Capabilities → TCC → Creative Performance H7a</td>
<td>.1004</td>
<td>.0829</td>
<td>-.0003</td>
<td>.2883</td>
</tr>
<tr>
<td>Creative Capabilities → TCC → Creative Performance H7b</td>
<td>.1573</td>
<td>.0787</td>
<td>.0583</td>
<td>.3245</td>
</tr>
<tr>
<td>TCC → Creative Performance → Sourcing Performance H8</td>
<td>.6219</td>
<td>.2680</td>
<td>.2334</td>
<td>1.1070</td>
</tr>
</tbody>
</table>

a. Bias-corrected, accelerated bootstrapping confidence intervals.
b. One-tailed alternatives.

**Figure 3.2** Empirical Results

**DISCUSSION**

*Theoretical Contributions*

The main objective of our study is to unravel the collective, creative climate of sourcing teams during the formulation of sourcing strategies. This study offers several implications for theory development. First, compliant with recent behaviour-oriented perspectives in P/SM and Operations management, we empirically validate TCC as a focal variable to explain how sourcing team members develop shared beliefs about how to build creative sourcing strategies (Schneider et al. 2013). In organization and general team literature climate constructs have been employed as relevant process variables to explain why some teams perform better than others (Anderson et al. 2014; Hunter et al. 2007). With TCC explaining about half of the variance in creative performance of sourcing strategies, the construct has substantial predictive power. Given recent advancements into the ‘soft issues’ of team-based work systems in supply and operations management (e.g. Driedonks et al. 2010; Fawcett et al. 2008; Pagell and LePine 2002), TCC offers a starting point to further account for and explore behaviour in sourcing teams. This is also reflected in general sentiment of round table participants who believe that “climates can take over a leading function [or] mechanisms and guide team members...
towards a common purpose”. Especially when pressured for time, costs and operational efficiency participants regard it as “important to have clear procedures and rules for how we work together as a team”.

Second, our study reveals that the sourcing teams’ work process for successful strategy formation is primarily driven by creative capability, and to a lesser extent by task-related capabilities. Our study contributes to the emerging literature on sourcing teams by demonstrating that ‘soft’ skills are essential for the development of competitive sourcing strategies. Sourcing teams have been cited as a remedy in dealing with the increasing complexity in sourcing projects (Driedonks et al. 2010; Trent 2004). Creative and value-enhancing sourcing team performance calls for a different set of preconditions and capabilities. We extend understanding of the success factors that enable sourcing teams to generate value for their companies in continuously changing business environment and more complex supply networks (Eltantawy and Giunipero 2013; Giunipero et al. 2005).

Next, we also offer empirical evidence that investments into creative capabilities and behaviour in sourcing teams benefits the bottom-line. Nearly a third of the variance in sourcing performance is explained by the extent to which sourcing strategies are creative. Extant research has acknowledged the expanded role of sourcing teams, but has failed to provide adequate measurement or evidence for their increased scope of influence. In the workshop participants noted a “gap in what is wanted, what is done and what is measured” in a sourcing context. If sourcing is to be established as a strategic activity, the value delivered by sourcing teams needs to be specified and captured accordingly. Practitioners admit that “it is difficult to create KPIs for assessing wicked problems because they are more of a qualitative nature and not so much about numbers”. Thus, the person evaluating or assessing whether the strategy adds value in novel, relevant, feasible and specific ways must have sufficient knowledge on the background and nature of the problem.

Third, with respect to the leverage effect of functional diversity, we add to the debate on whether cross-functionality in sourcing teams is indeed an appropriate vehicle for tackling complex and strategic sourcing problems (Monczka, Trent, and Petersen 2006). The cross-functional orientation in sourcing has been argued to lead to a more holistic, business-oriented view of sourcing decisions (Moses and Ahlstrom 2008). A functionally heterogeneous team is especially suitable for projects requiring a variety of knowledge, skills and abilities (Pagell and LePine 2002). We complement these theoretical considerations with empirical evidence for a positive and significant leverage effect of functional diversity. This finding is in support of early research on sourcing teams by Trent (1998), highlighting that once an appropriate sourcing project has been defined, equal attention should be paid to including employees from all functions critical to the continuous support of the team task. The more functions are represented in the team, the more and diverse knowledge is available that team members can collectively exploit and recombine to formulate creative and effective sourcing strategies. Along the same
lines, round table participants indicated that “functional diversity itself might serve as a proxy for something else”, such as increased levels of information processing to make sense of the different information, opinions and perspectives that each individual brings to the team (Van Knippenberg, De Dreu, and Homan 2004).

Finally, we found interesting results with regard to the role of team leaders in guiding teams towards achieving desired results. In spite of respondents’ high evaluations of leader behaviour (M=3.95, SD=0.37), Facilitative Leader Behaviour was found to negatively moderate the relationship between Creative Capabilities and team climate. In other words, the creative capacity of team members will only contribute to a creative climate when the team leader does not display supportive behaviour. The presence of a highly facilitative leader seems to provide team members with less incentive or opportunity to build climates conducive to creativity themselves. In those situations, the team leader seems to have a stronger, direct as well as positive impact on the team’s climate. In order to further elucidate the exact relationship between leadership, members’ creative ability and team climate, findings were discussed with roundtable participants. First, there was general consensus that a leader is not necessarily needed in a highly creative team; creativity cannot be forced and can even be blocked by leaders. Instead it suffices to “set stringent targets for highly creative teams and let things happen”. Highly creative teams are also often highly autonomous teams that do not, in addition, need a highly creative leader. Second, the type of leadership needed depends on the phase in which a project is. According to the situational leadership style framework (Hersey and Blanchard, 1993), leaders must change and adapt their style in each project phase (i.e., forming, norming, storming and performing) to be better able to influence team members. Leaders need to focus on a facilitating role in the beginning and “need to make decisions and get things done towards the final stages”. Future studies should include additional leadership styles such as transactional leadership and follow a longitudinal design to allow controlling for the phase of the project. Third, sourcing projects that require creative problem-solving approaches might perform better without any classical leaders. Instead, it is more important to establish a team climate in which individual members feel encouraged and invited to work together as a team. As such, climates provide a powerful concept equipping managers with an instrument for channeling collective team efforts. If managed well, climates can take over a leading mechanism and guide team members towards a common purpose. Fourth, purchasing managers pointed towards the possibility of distributed leadership – where individual team members are all the same and everybody is in the lead – being more effective for producing creative outcomes.

Managerial Implications

In managerial terms our research constitutes a systematic assessment of the potential for ‘creative action’ in cross-functional sourcing teams. Our findings give rise to a num-
ber of relevant managerial implications for top management, team leaders, and their team members. First, CEOs and CPOs should join forces in promoting synergy-seeking behaviour within the organization by pooling relevant expertise and knowledge from various departments. When involved in cross-functional sourcing teams, purchasing professionals can add value to the company by creatively designing sourcing strategies that subsequently impact the bottom line (Fuchs et al. 2013). During the roundtable some participants admitted that “creativity and creative ability are not so much on the agenda of procurement and need also different measures”. Creating awareness for the importance of entrepreneurial problem-solving approaches and creative climates during the project brief could alleviate this. “Making people aware of what [the company’s] target is” was regarded as an effective means to encourage and incentivize sourcing participants to seek value-based as opposed to simple cost-saving sourcing solutions. This would also help to improve the general image of the purchasing profession and enhance the transformation of the function as a whole from a cost-focused to a value-orientated one. As a long-term result, business stakeholders will be able to better and faster recognize the strategic importance of sourcing-related activities. Overall raised bottom-lines, stronger competitive advantage, and heightened value-creation capabilities could be the ultimate consequence.

Second, we introduce a checklist of specific behaviours that employees could adopt when working in cross-functional sourcing teams. We call this the creative team climate. In line with recent deliberations on creative performance in sourcing, the notion of climate “points towards choices rather than being prescriptive” (Carlsson 2015, p.22). Scholars and managers took some time to adopt this sentiment as they were long pondering on why so many sourcing teams failed in their attempt to create value. The proliferation of cross-functional sourcing teams made the reasons more apparent. Since many individuals with competences in diverse functional areas come together during the sourcing strategy development process, true creativity requires some trade-offs to be made by the involved individuals (Carlsson 2015). As pointed out by workshop participants “in the end it is about behaviour...not only about what you do but also how you do it”. Hence, context-setting becomes crucial to make sure everyone can contribute adequately and effectively to the creative process of strategy development. By setting a creative team climate, team members can reach a common understanding from which the team eventually can function effectively.

Further, CPOs can stimulate creative climate building by staffing teams with individuals possessing sufficient creative capabilities and diverse task-related expertise. Results point to asymmetric effects of creative and task-related capabilities have on the origination of a creative team climate, creative climates have a stronger impact. In other words, staffing teams with sourcing experts and specialists is not enough. Creative capabilities have a determining influence on the team’s creative climate as well as on the extent to which the sourcing strategy is novel, relevant, feasible, and specific. During the round table discussion participants acknowledged that “system-thinking dominates
the approach to procurement”, meaning that due to an overly focus on sourcing procedures and processes purchasing professionals are generally not able to pursue new solution paths for true value creation. Against that background, it is time to abandon the long-prevailing opinion that task-related capabilities are the gold standard for sourcing effectiveness. In fact, during the round table discussion participants pointed to the importance of taking a balanced approach, paying attention to both problem-solving and task-related skills in sourcing teams. Leading edge companies seek complete buyers who are “highly educated people, (with) communication skills and teamwork orientation, strong personality, and a general business view” (Hardt et al. 2007). The impact of task expertise on climate can be increased by staffing sourcing teams with individuals from different functional departments. One workshop participant pointed out that “being a generalist is not sufficient anymore” and that instead “deep and specialized knowledge” combined with some general knowledge is needed. In order to benefit from diversity though, team members need to derive a common understanding of how to work together as a team. Only then will “each and every one bring in their own expertise” to produce outcomes that are more than just the sum of what its individual members would have accomplished.

Limitations and Suggestions for Further Research

Every study should be assessed in light of its limitations; these are outlined as well as discussed in terms of future research opportunities in the following. First, aggregating data to the team-level of analysis resulted in a large loss of individual-level information in the original data set. Since contemporary research methods still do not provide clear-cut procedures for analyzing data across multiple levels, aggregation was required to apply ordinary least squares path analysis procedures. Another limitation associated with aggregation is the relatively small sample size on the team level (n=52) compared to the individual level (n=253). Results hence need to be handled with care when attempting to generalize to a larger population.

Second, with teams evolving as the dominant mode for getting strategic sourcing projects done (Trent 2004), it might be valuable to develop a systematic taxonomy of sourcing projects. Kraljic’s (1983) popular purchasing portfolio, for instance, provides an adequate template for further defining and delineating the nature of sourcing projects for different spend categories. Each of these spend categories requires different extents of creative problem-solving. A deeper understanding of when and where creative problem-solving are useful across different spend categories could enable managers to optimize team staffing, improve guidance of sourcing teams during strategy building, and help scholars as well as practitioners in the decision of whether or not a creative climate perspective is of help.

Given the proliferation of team-based approaches in sourcing (Johnson, Robert, Michiel, and Fearon 2002), future research should verify for which type of projects a
CHAPTER 3

creative approach is appropriate. We collected additional data on the underlying project characteristics with a short follow-up survey among team leaders\(^ {11}\). Responses from 36 out of 52 contacted team leaders indicate that the sourcing projects constituted sourcing categories that scored relatively high on strategic relevance, while entailing low to moderate levels of risk. A simple scatter plot based on the scores on strategic relevance as well as risk suggests that most sourcing projects in our sample are located in the strategic quadrant of Kraljic’s purchasing matrix (1987), closely followed by the leverage quadrant. This ad-hoc observation warrants additional substantiation by means of preferably both, qualitative and empirical research. Given scant knowledge on this topic, an exploratory approach seems best suited to enhance our understanding about the impact of creative approaches on purchasing performance across different purchasing categories (see e.g., Ates, Wynstra, and van Raaij 2015).

Finally, merely one leadership style was assessed to account for the impact of team leader behaviour. Future studies should include different leadership styles to compare and contrast the effectiveness of facilitative behaviours vis-à-vis more task-oriented leader behaviours (Driedonks et al. 2014; Hult et al. 2000). As leaders must change and adapt their style in each project phase (Hersey and Blanchard 1993), future studies should also control for the phase or timing of the project (i.e., forming, norming, storming, performing). Further scrutiny of leadership styles might help to find additional explanations for the attenuating effect of facilitative leader behaviour on the relation between members’ creative skills and the origination of a creative team climate.

\(^{11}\) Team leaders were presented with four word pairs and asked to indicate which attribute best characterized the nature of the sourcing project using a scale from 1 (=I strongly agree with the first attribute) to 5 (=I strongly agree with the second attribute). The word pairs were routine task vs. new task (M=3.47, Mode=4), compliance-oriented vs. value-oriented (M=3.72, Mode=4), non-strategic vs. strategic (M=3.81, Mode=4), low risk vs. high risk (M=2.97, Mode=2).
In order to grow their business, buyers increasingly co-innovate with suppliers. In these cases, innovation is driven by creative ideas originating from close interaction between buyer and supplier employees in designated project teams. Identifying and selecting ideas that will grow both partners’ business requires collective, creative teamwork. Besides managing contracts and forging strong supplier relationships, top management must therefore also devote attention to enabling creative processes within these teams.

Drawing on the notion of work-unit climate, this study investigates how team creativity climate (TCC) – defined as members’ shared perceptions of policies, procedures, practices they pursue to attain desired creative outcomes – can facilitate the generation and identification of viable solutions to capitalize on an innovation opportunity. Analysis of dyadic data collected from 47 co-innovation project teams reveals that buyer and supplier sales turnover are driven by TCC, entirely mediated by creative performance. The positive main effect is attenuated at high levels of contractual governance between partners, but is unaffected by partner commitment.

The author of this dissertation (1st author) was the main researcher and responsible for the majority of work in this chapter. This research was conducted in collaboration with Rozemeijer, F.A. (2nd author), de Ruyter, J.C. (3rd author), and de Jong, A.D. (4th author). Promotors and co-promotors served as sparring partners and their feedback was implemented during several revision rounds.

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CHAPTER 4

INTRODUCTION

In times of intensified competition (Ketchen et al. 2007), buying firms must constantly innovate their products, services, and processes for maintaining top-line growth vis-à-vis competitors (Nowosel, Terrill, and Timmermans 2015; O’Brien 2015). Recognizing suppliers as experts of their products and technologies (Aune and Gressetvold 2011), buying firms often tap into the creative capacity of strategic suppliers to create win-win solutions benefitting both parties (van Echtelt et al. 2008; Wagner 2012; Wynstra et al. 2001). In order to get access to suppliers’ creative ideas and technologies before competitors do (Ellis et al., 2012), buyers increasingly adopt an ‘open innovation’ approach (Chesbrough 2006; Schiele 2010). Many firms (e.g., Unilever, P&G, BASF, McDonald’s, Philips) make huge efforts to involve key suppliers in dedicated, interfirm innovation teams from start to finish (Capgemini 2013). Successful involvement of suppliers in the so-called fuzzy front end (FFE) – the period of time between the emergence of an initial idea and its initiation – is decisive for the success of innovation projects (Hauser et al. 2006; Langerak et al. 2004; Wagner 2012). The literature has shown that early supplier involvement can increase the efficacy of buyer-supplier alliances by creating more value out of existing resources (A.T. Kearney 2010; Das and Teng 2000), leading to increased innovation performance (van der Valk and Wynstra 2005), shorter cycle times (Primo and Admunson 2002), better response to market (Capgemini 2013), and improved firm profitability (Ragatz et al. 2002).

However, effectively involving suppliers in co-innovation project teams is no panacea and poses a major challenge for the management and project members at both firms. For instance, a global study among CPOs reveals that merely 21 percent is satisfied with the effectiveness of supplier involvement in innovation activities (Capgemini 2010). A possible reason for this may be that tasks and decisions during the early stages of innovation are generally ill-defined, non-routine, and ad hoc (Frishammar et al. 2011; Wagner 2012). Involving suppliers in the process of idea generation and idea selection further adds to the inherent dynamic, uncertainty and equivocality. Project members are hence challenged to develop a common team perspective of collective, creative problem-solving to effectively deal with the high versatility, complexity and vulnerability of collaborative innovation (Andersen and Kragh 2013; Das, Narasimhan, and Talluri 2006; Fawcett et al. 2008). Senior management’s challenging job is to facilitate teams in this process by creating an environment conducive to collective, creative solution-finding (Jörgensen et al. 2011; Wynstra et al. 2012). So far, little is known about collective sensemaking processes between buyers and suppliers during the early stages of collaborative innovation projects. Therefore, additional research is needed to advance managerial and academic understanding of how joint innovation teams generate and select their creative ideas. The identification of conditions fostering this process is crucial to help senior management creating the right environment and thereby spurring business growth accruing from joint innovations.
Current studies on supplier involvement in customer innovation offer ambiguous results; some report positive (Petersen et al. 2005), some negative (Koufteros et al. 2005) and yet others zero association with innovation performance (Hong and Hartley 2011). We posit that these mixed findings may be an artifact of insufficient attention paid to team-level issues in the FFE (Hoegl and Wagner 2005; Wagner 2012). In fact, Wagner (2010) noted a lack of understanding about how the behaviour, actions and interactions between members of a project team are influenced by conditions at the inter-organizational level. Against this background, we set out to explore theoretical perspectives that help building an understanding of collective sensemaking in buyer-supplier innovation teams. The notion of climate lends itself as an appropriate means to do so, capturing how individuals develop a shared understanding of relevant behaviours to achieve outcomes as a team (Schneider et al. 1992). In this study we adopt a climate perspective to illuminate how buyer-supplier innovation teams identify the most creative and promising solutions to pre-defined problems. We aim to contribute to the literature in three important ways.

First, we introduce and validate Team Creativity Climate (TCC) as a construct to capture collective action within joint innovation teams (e.g., see Anderson and West 1998; Baer and Frese 2003; Ekvall 1996). Creativity is social in nature, arising from collective knowledge and in interaction with other people (Andersen and Kragh 2013). The social nature of creativity is even more pronounced when innovation activities cross organizational borders (Perry-Smith 2006). Soft and behavioural issues are therefore increasingly recognized as critical for involving suppliers in innovation projects and thus decisive for project outcomes (e.g., Schiele 2010; Wagner 2010). Climate constructs have proven effective in explaining the sensemaking processes of individuals performing collaborative, creative tasks in work teams (Zohar and Tenne-Gazit 2008). Accounting for the process by which individuals from both partner firms develop a shared interpretation of their work environment and underlying task can help explaining why some buyer-supplier teams manage to collaboratively identify creative solutions leading to business growth, while others fail.

Second, we decipher the process by which collective efforts of mixed innovation teams will materialize in terms of sales. According to Amabile (p.1, 1996), “innovation is the successful implementation of creative ideas in organizations”. Successful implementation of ideas, in turn, depends on one’s ability to generate and select the most creative ones in the first place (Ritter et al. 2012). Identifying and selecting the best ideas is particularly challenging in an inter-organizational context as solutions must meet the specification and interest of both parties. We account for this and introduce a construct to assess proposed solutions in terms of their novelty (i.e., idea generation) as well as feasibility, relevance and specificity (i.e., idea selection). Moreover, by obtaining information on expected business growth accruing from implemented ideas to both parties, this study clarifies whether buyers and suppliers benefit equally from their joint innovation projects.
Third, we introduce interaction terms to account for the heterogeneity frequently associated with involving suppliers in co-innovation projects (Wagner and Hoegl 2006). The discussion about relevant conditions that senior management can influence to foster creativity mainly revolves around contractual and relational issues (Bstieler 2006; Lawson et al. 2009). Fearing the loss of proprietary information, top management demands clearly written agreements specifying rights, obligations, and ownership of intellectual property (IP) (Lumineau and Malhotra 2011). Recent literature suggests to also and equally consider “partnering” as a critical contingent factor (Hoegl and Wagner 2006). For example, buyers strive for achieving preferred customer status to secure preferential treatment from suppliers such as exclusive access to innovation and ideas (Schiele 2012). In order to identify which and whether organizational contingencies are effective for managing inter-organizational innovation teams at the project level, contractual governance and partner commitment are included as moderators. The presence of both is expected to amplify positive main effects between climate and the identification of creative solutions.

This study proceeds with an introduction of the theoretical underpinnings of work-unit climate, illustrating its applicability to the context of buyer-supplier innovation projects. After introducing the conceptual framework and hypotheses, we report results of an empirical study conducted on a sample of 47 buyer-supplier project teams and conclude with a discussion of theoretical as well as managerial implications.

CONCEPTUAL BACKGROUND

Team-level Issues in Co-innovation Projects

The supply base is increasingly recognized as a critical source of competitive advantage and innovation. In an attempt to access external sources of technology and knowledge, more and more buying firms form closer relationships with a smaller set of key suppliers (Ellis et al., 2012). Early and extensive engagement of suppliers in innovation projects has been shown to improve quality and timeliness of product design (Primo and Admundson 2002) and firm financial performance (Petersen et al. 2005). Recently, however, it has become evident that the integration of suppliers into customers’ innovation projects does not come with a guarantee for successful outcomes (e.g., Koufteros et al. 2005). Innovation projects extending beyond organizational boundaries are more challenging and complex to manage than traditional intra-firm innovation teams (Bstieler 2012). The overall quality of the business relationship between two partner firms will generally be reflected in project members’ behaviour and interaction within the project team itself (Jörgensen et al. 2011; Wynstra et al. 2012). Yet, the inter-organizational project team forms an entity of itself with an own set of unique difficulties (Lawson et al. 2009). The work of these teams is characterized by a high degree of ambiguity with
respect to customer demands, technological requirements, available knowledge, and expected outcomes (Kim and Wilemon 2001; Potter and Lawson 2013). Frequent and unexpected changes in customer demands coupled with the strict development cost and time constraints can further complicate the successful execution of co-innovation projects (Carbonell and Rodriguez-Escudero 2013; Lam and Chin 2005). The complex and interactive process of developing creative solutions within the scope of an existing business relationship is often referred to as ‘black box’ innovation (Handfield et al. 1999; Monczka et al. 2000).

**Team Creativity Climate**

Against this background, an inherent challenge of project members lies thus in carefully developing a way of working together as a team. The issue of team member alignment is particularly salient during the early innovation stages, which are oftentimes non-routine and ill-defined (Wagner 2012). Here, the main task of buyer-supplier innovation teams is to cooperatively find creative solutions to identified problems or opportunities. Selecting the best and most viable solution, however, is a difficult undertaking as there is a strong tendency to select feasible and desirable ideas at the cost of originality (Rie tzschel, Nijstad, and Stroebe 2010). Preventing this requires project members to share information, adapt to new information provided by members from the partner firm, and proactively participate in decision-making processes (Birou and Fawcett 1994; Fliess and Becker 2006). Difficulties in searching sources of knowledge as well as identification of its usefulness are common barriers to effective knowledge transfer during supplier-integrated innovation (Zhao and Lavin 2012). Hence, reaching an agreement on the demands that a solution must meet to be creative in the first place should be the ultimate goal of team interaction. Once essential parameters are clarified and communicated, project members can immerse themselves in knowledge creation and transfer across organizational boundaries to generate creative ideas and finally select the best for implementation. This form of creative problem-solving implies that project members have to constantly adapt to the team by investing in the relationship with team members, coordinating resources and abilities, and building a common understanding of working together (Cannon and Perreault 1999; Chang et al. 2012). By means of workplace socialization processes shared perceptions or beliefs are communicated to project members and become the new reality to align on (Cousins et al. 2006). The notion of climate emerged as a theoretical perspective to describe how individuals derive such shared meaning from their immediate work environment to adopt relevant role behaviours expected from them. Climate is defined as employees’ shared perceptions of practices, procedures, and activities that get emphasized, supported, and rewarded in the workplace (Schneider 1990). Adopting a climate perspective can be beneficial for explaining the process by which employees are directed to engage in desired behaviours that contribute to the fulfillment of organizational goals and objectives (Lindell and
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Brandt 2000). Especially facet-specific climates – directed at a specific goal or activity (e.g., creativity) and at a specific level (e.g., team) – have been show to constitute highly proximal measures of the process by which team members develop a sense of “the way we do things around here” (Schneider et al. 1996, p. 12). Scholars argue that these facet-specific climates can better capture the phenomenon of interest and its relationship with any particular outcome than generic or organizational climates (Zohar and Luria 2004; Zohar and Tenne-Gazit 2008). In the context of collaborative buyer-supplier teams the activity of creative solution identification provides such a facet. We thus adopt creativity as the focal facet and define team creativity climate as \((\text{buyer and supplier})\) team members’ shared perceptions of their joint policies, procedures, and practices with respect to generating and selecting creative ideas for commercialization in co-innovation projects.

HYPOTHESES DEVELOPMENT

A shared perception of how to do things as a team can help buyer-supplier teams turning diversity into synergy and achieving cross-fertilization of ideas (Kliem 2004). Early work on buyer-supplier interaction in innovation projects had already pointed out the importance of cooperative attitude or sentiment between buyer and supplier employees for performance outcomes (Larson 1994). Over the years, numerous scholars have gathered conceptual and empirical evidence for the relevance of aspects such as communications, teamwork, cooperation, trust, unity, coordination, and respect for the success of buyer-supplier innovation projects (Chang et al. 2012). Today, the value of teamwork and integrated buyer-supplier efforts is uncontested (Wagner 2012). With teams becoming the dominant mode of getting work done in contemporary organizations and between organizations (Fisher and Amabile 2009), we need theoretical perspectives explaining how creativity and innovation result from collaboration between collections of individuals (Fischer et al. 2005). Several authors point out that the positive effects of supplier involvement, as argued on the organizational level of the dyad, are not easily achieved on the project level (Hoegl and Wagner 2005). Against that backdrop, we adopt a dyadic perspective on collaborative innovation and extend it by drawing attention to relevant processes within teams of the dyad. We thereby focus the attention to where actual project work is carried out and explicitly account for project-internal socialization processes between team members. Socialization – the process of interaction and communication between individuals of different firms – is regarded as an important driver of buyer-supplier collaboration effectiveness (Cousins et al. 2006). Familiarization with and incorporation of each other’s needs, preferences and capabilities fosters a cooperative working atmosphere and positive affective tone, encouraging mutual assistance as well as joint decision-making within innovation teams (Hoegl and Wagner 2005; Wagner and Hoegl 2006). This in turn improves communication, prob-
lem-solving and knowledge sharing between project members (Cousins and Menguc 2006; Lawson et al. 2009). The ultimate consequence being that the team is better equipped to identify creative solutions, adequate to capitalize on an innovation opportunity that will benefit both partners (Rietzschel et al. 2010). Based on our argumentation above and consistent with extant theorizing (Si and Wei 2012), we expect TCC to increase the likelihood that the creative performance of co-innovation teams is higher. Hence,

**Hypothesis 1:** When team creativity climate is high, creative performance will be higher.

**Creative Solution and Innovation Performance**

As mentioned earlier, research on the effectiveness of supplier-integration in innovation projects remains inconclusive. Besides insufficient attention paid to team-level issues, another explanation might be that creativity is often confounded with innovation (Anderson et al. 2014). Moreover, studies predominantly focus on innovation as the dependent measure, thus potentially ignoring precursory and complementary cause-and-effect relationships with creativity (Wagner 2012; Wang et al. 2008). This study therefore explicitly distinguishes between the two concepts and accounts for their interrelatedness, eradicating potential deficiencies of previous studies on the issue of supplier-integrated innovation. A brief review of pertinent literature, for instance, reveals that innovation is defined as creativity implemented (see e.g., Amabile 1996). It follows that successful implementation of ideas requires the generation and selection of the best option from a range of possible options (Rietzschel et al. 2010; Ritter et al. 2012). Distinguishing between creativity and innovation is also relevant to more accurately reflect the managerial process of turning creative ideas into actual innovation. Implementation is preceded by creative thinking which involves two components: generation of creative ideas (via divergent thinking) and evaluation or selection of these ideas (via convergent thinking) (Cropley 2006). Accordingly, project members must first generate creative ideas, before entering a discussion about selecting the best option for capitalizing on a specific innovation opportunity or for solving a specific problem. That is, the team must “stop emphasizing what is novel and start emphasizing what is useful” to narrow down the range of options (Harvard Business Publishing 2010, p.48). Assessing their own ideas according to a set of performance criteria can facilitate the ruling out of options and selection of the most creative and viable one for implementation (Fisher and Amabile 2009). In the context of collaborative innovation between buyers and suppliers, a solution is creative when it is novel (new and different), feasible (can be implemented with existing resources and skill), relevant (appropriate and useful for target audience), and specific (described in detail) (e.g., Carson 2007; Im et al. 2013; Kim and Wilemon 2002).

We explicitly account for the sentiment of idea selection being crucial for its successful
implementation (Harvard Business Publishing 2010; Ritter et al. 2012), by hypothesizing creative performance of a solution to positively impact financial performance. Following P/SM scholars we define financial performance as the (expected) growth in business (i.e., sales turnover) accruing from the implementation of ideas of both buyers and suppliers (Cullen et al. 1995). Hence,

**Hypothesis 2:** When creative performance is high, a) buyer’s sales turnover and b) supplier’s sales turnover will be higher.

**Contractual Governance as Moderator**

Interaction and information exchange between project members on the team level does not come without risks. Maintaining security and preventing the loss of proprietary information to competitors are central concerns of managers (Cheung et al. 2011; Luoma et al. 2010). It is thus in the interest of both partner firms to subject collaborative, creative teamwork between individuals to certain limitations and boundaries. Legal contracts are prominent means to regulate and facilitate the exchange among partners in order to achieve project objectives (Arranz and Arroyabe 2012; Poppo and Zenger 2002). Through a system of incentives and stipulations contracts ensure that partners’ interests are regarded and a certain level of goal congruency is maintained (Andersen and Kragh 2013). If designed properly, formal contracts between two partner organizations can help to make behaviour at the team level more predictable (Bstieler 2006). Creative problem-solving in buyer-supplier teams is the result of interactions among personal, process, and situational factors (Amabile 1983; Isaksen et al. 1993; Woodman and Schoenfeldt 1990). A number of scholars have already paid attention to the role that contracts as a form of transactional governance play in buyer-supplier innovation projects in that respect (e.g., Primo and Admunson 2002; Liu et al. 2009; Ragatz et al. 1997, Sumo 2014). The presence of legal contracts can stimulate the personal interaction of project members and increase their willingness to share tentative information (Birou and Fawcett 1994). Attempting to reduce the uncertainty and ambiguity in inter-organizational collaboration projects, they act as safeguard against opportunistic behaviour among business partners at the project level. In situations where issues of intellectual property (IP) are clarified from the outset on in terms of what can be shared, when and with whom, people tend to be more open for creative exchange with each other. We hypothesize contractual governance\(^{12}\) between the partners to facilitate translating

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\(^{12}\) We acknowledge that Contractual Governance encompasses more aspects and mechanisms than are listed here. The items used to measure Contractual Governance are by no means exhaustive nor sufficient to cover all facets or mechanisms of Contractual Governance. Given the focus of this chapter, an investigation and comparison of how contractual vs. relational factors influence buyer-supplier innovation projects at the team level, our conceptual definition was kept narrow on purpose. In anticipation of reviewer comments, two additional constructs relating to Contractual Governance were included in the survey: outcome-based control and process-based control. For both, no significant path coefficients were found.
creative team climate into creative performance of buyer and supplier employees in co-innovation projects. Hence,

**Hypothesis 3:** When contractual governance is high, the positive effects of team creativity climate on creative performance will be stronger.

**Partner Commitment as Moderator**

Legal contracts are a necessary but not sufficient condition for successful buyer-supplier collaboration in innovation projects. Scholars are increasingly advocating relational governance as an alternative mode to managing the partnership (Hald et al. 2009). Relational perspectives within the buyer-supplier relationship literature are proliferating, focusing on loyalty (Lam and Chin 2005), commitment (Koufteros et al. 2007), trust (Bstieler 2006), respect (Van de Vijver et al. 2011), and social capital (Blonska, Storey, Rozemeijer, Wetzel, and de Ruyter 2013). While all concepts serve to assess the overall quality and nature of a focal business relationship, scholars argue that commitment is the core element in defining relational risk perception (Bazyar et al. 2013; Leonidou et al. 2008). In fact, commitment has been repeatedly shown to be a strong antecedent of loyalty and trust originating between a buyer and a seller over the course of a relationship (e.g., Morgan and Hunt 1994; Bloemer and Odekerken-Schröder 2003). As such the construct is an appropriate variable to approximate the extent to which the partners have exerted consistent effort to gradually build trust (Kliem 2004). Defined as the desire to continue a relationship because of positive affect toward the partner (Meyer and Allen 1984), partner commitment serves as an appropriate proxy for channel partners’ willingness to maintain a mutually beneficial relationship (Morgan and Hunt 1994). A relationship is characterized by high commitment when the channel partners’ interests converge (Kumar et al. 1995). During inter-organizational innovation involving knowledge exchange and problem-solving in project teams, both parties face risks and find themselves vulnerable to the actions and decisions of the other party (Bstieler 2006). In such situations, commitment between the partner firms can reduce the uncertainty associated with the mutual transfer of know-how and collaborative efforts in these teams. That is because individual project members will adopt relational norms at the firm level to the project level, thus positively impacting individual behaviour and fostering a cooperative atmosphere among project members (Liu et al. 2009). The notion of commitment is wedded to the idea of preferred customer status by which buyers hope to receive preferential treatment including the delegation of the best engineer to a co-innovation project or the first offering of a new idea (see e.g., Hüttinger, Schiele, and Veldman 2012). Partner commitment motivates parties to perform reciprocal behaviour, such as partner-specific innovation investments (Henke and Zhang 2010). At high levels of commitment, the partners perceive each other’s abilities, expertise, knowledge, motives, or intentions more positively (Bstieler 2006). Functioning as a
cohesive force and facilitating behavioural adaptations at the team level (Chang et al. 2012) we expect partner commitment to be a catalyst for creative team climates’ translation into creative performance. Therefore,

*Hypothesis 4:* When partner commitment is high, the positive effects of team creativity climate on creative performance will be stronger.

**Mediation Effects**

An important contribution of this study to the literature lies in decoding the sequence of activities leading to successful outcomes of buyer-supplier co-innovation projects. In an inter-organizational context, the financial success of an innovation project hinges upon the team’s ability to identify and select the best solutions given the problem or opportunity at hand. Generating and selecting ideas that will serve the interest of both partners, however, demands the close coordination and interaction of project members. The facet-specific climate construct TCC is introduced to capture such collective action within joint innovation teams (e.g., Anderson and West 1998; Baer and Frese 2003; Ekvall 1996). In an effort to further substantiate our assumption of the positive impact team climates have on the business growth accruing from innovation, we hypothesize a mediating effect of the creative performance of teams. That is, we postulate that TCC only leads to sales turnover by virtue of stimulating and enabling teams to generate creative ideas and select the best one. Hence,

*Hypothesis 5:* Creative performance will mediate the relationship between team creativity climate and a) buyer’s sales turnover and b) supplier’s sales turnover.

*Figure 4.1 Conceptual Framework*
METHODOLOGY

Research Setting and Data Collection

A global manufacturer of FMCGs with roughly 170,000 employees was solicited for participation in our research. The company’s strategic supplier relationship program was identified as an appropriate setting for collecting data from mixed project teams fitting the research theme. Sampling from this population of about 120 suppliers followed a number of criteria: the project had a specific and jointly agreed-on innovation agreement in place, the project involved collaboration with a product-related supplier (i.e., no service suppliers), the project had to be terminated no longer than 3 months ago at the time of data collection, the project team included at least one employee representing the customer and at least one employee representing the supplier, a formal project owner able to assess team performance could be identified at both firms. In the interest of a high response rate and following advice for empirical testing in the alliance context (Das and Teng 2000), project owners at the customer firm were contacted to inform team members and colleagues from the supplier firm. Upon consent, 295 individuals in 58 buyer-supplier teams received personalized emails with clear instructions and a link to the online survey. Personal contacting, guaranteeing confidentiality to respondents and several reminders resulted in an initial response of 216 individuals (109 buyer and 108 supplier employees). Screening the data for incomplete responses led to a final response rate of 64% (61% for buyers, 68% for suppliers), with 190 individuals (94 buyer and 96 supplier employees) representing 47 project teams across 17 different strategic suppliers as the final sample. In order to aid interpretability of our findings, study results were discussed during a round table session with invited managers to improve interpretability of results.

Sample Description

The majority of respondents was male (70%) with an average age of 46.3 (SD=10.4), primarily from the EU mainland (54%), the UK (24%) and non-EU countries (21%). On average respondents had 19.4 (SD=7.3) years of job experience and spent on average 15% of their work time in the focal project team, almost all respondents were involved in multiple project teams (93%). Respondents were member of their team for, on average, 24 months (SD=17.8). The majority of respondents held a position in R&D (52%) followed by Purchasing (21%), Account Management (13%), Sales and Marketing (12%), and a range of various other positions (2%) including Project Management. The majority of functions represented in teams was from the supplier’s or buyer’s R&D departments, followed by buyer’s purchasing representative and supplier’s account managers. On average, the focal buying company had been engaging with participating suppliers for 36 years (SD=25.3) and average project duration was 32 months (SD=27.7)
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Measurement Items

We developed a new measurement scale for TCC in accordance with well-established scale development principles (Kiratli et al. 2016). The other constructs in the study were largely based on and adapted from existing scales (see Table 4.1). Items for measuring buyer’s and supplier’s expected growth in sales turnover were inspired by studies on alliance performance (Cullen et al. 1995) and corroborated with input from practitioners. Account managers at the supplying company and project owners at the buying company judged sales turnover against set targets with customers and end-customers, respectively (Buyer: “Compared to other teams of which you can judge the performance, this team’s solution created market turnover...”, Supplier: “Compared to other teams of which you can judge the performance, this team’s solution created business turnover...”). All items were measured on a 5-point Likert scale ranging from 1 (strongly disagree/less than expected) to 5 (strongly agree/more than expected) and showed satisfactory reliability (DeVellis 1991) as well as discriminant validity (Fornell and Larcker 1981) (Table 4.2). Hedging against common method bias, we followed a multi-informant strategy and obtained the global ratings of sales turnover for a project from project owners at both firms. As a second measure, we performed Harman’s (1976) single-factor test. A single factor accounted for 31.05% of explained variance so that common method bias is not a concern in our study (Podsakoff et al. 2003). Project duration (in months) as well as relationship tenure between the partner organizations (in years) served as control variables.

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13 Our measure of sales turnover is the anticipated, project-level, financial turnover compared to set target and is assessed by an account manager at the supplying company and project owners at the buying company. Supplier’s sales turnover refers to business turnover with a respective customer and buyer’s sales turnover refers to market turnover with (end-)customers.
Table 4.1 Measures, Reliability, and Convergent Validity (n=190)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Items</th>
<th>SL</th>
<th>CR</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contractual Governance</strong></td>
<td>adopted from Liu et al. (2010)</td>
<td>.94</td>
<td>.83</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Our relationship with this partner is governed by explicitly described and clearly written contract terms.</td>
<td>.86</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In addition to the contract with this partner there is an IP agreement which clearly describes in detail all issues related to IP.</td>
<td>.82</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>We and this partner have included all details relating to this collaborative project into the contract.</td>
<td>.88</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Partner Commitment</strong></td>
<td>Kumar et al. (1995)</td>
<td>.97</td>
<td>.90</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Even if we could, we would not drop our partner because we like being associated with it.</td>
<td>.92</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>We want to remain a member of our partner’s network because we genuinely enjoy our relationship with it.</td>
<td>.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Our positive feelings towards our partner are a major reason we continue working with it.</td>
<td>.88</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Team Creativity Climate</strong></td>
<td></td>
<td>.95</td>
<td>.67</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In our team we are open to each other’s views and ideas.</td>
<td>.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In our team we strive to think across departmental boundaries.</td>
<td>.66</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In our team we actively seek out each other for constructive discussions.</td>
<td>.81</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In our team we are encouraged to try new ways of doing things.</td>
<td>.73</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In our team we are comfortable with exploring unfamiliar ideas and unknown perspectives.</td>
<td>.68</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In our team we openly share our thoughts without fear of rejection.</td>
<td>.72</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Building on each other’s ideas is an integral part of how we work in our team.</td>
<td>.77</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In our team every team member’s contribution is taken seriously.</td>
<td>.73</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In our team we promote behaviours that are conducive towards a trustful environment.</td>
<td>.74</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Creative Performance</strong></td>
<td>Im et al. (2013), Kim and Wilemon (2002)</td>
<td>.96</td>
<td>.61</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Compared to other teams, our team was able to generate solutions that</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Novelty</td>
<td>...are really “out of the ordinary”.</td>
<td>.57</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>...are unconventional and original.</td>
<td>.64</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>...are radically new compared to industry norms.</td>
<td>.51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feasibility</td>
<td>...can be easily implemented.</td>
<td>.67</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>...do not violate known constraints.</td>
<td>.69</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>...are acceptable given known constraints.</td>
<td>.78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relevance</td>
<td>...are applicable to the stated problem.</td>
<td>.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>...are relevant for solving the problem.</td>
<td>.81</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>...are effective for solving the problem.</td>
<td>.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specificity</td>
<td>...are worked out in detail.</td>
<td>.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>...provide clear action points.</td>
<td>.82</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>...are presented in a communicative, understandable manner.</td>
<td>.82</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: SL = standardized loadings, CR = composite reliability, AVE = average variance extracted.
Aggregation Justification

The conceptualization as well as operationalization of all constructs complies with the referent-shift consensus model (Chan 1998). Aggregating referent-shift items is conceptually appropriate as they refer to the level (i.e., the team/the firm) to which individual responses will be aggregated (Le Breton and Senter 2008). We establish empirical evidence that respondents’ perceptions of all constructs are shared using the interrater agreement approach (James et al. 1984). As the R_wg coefficients for TCC and Creative Performance are very high (M=.96, Median=.97), respondents agree in their assessment of constructs such that their ratings are interchangeable (Schneider et al. 2013). All subsequent testing of main effects was conducted at the team-level of analysis. The two moderators (Contractual Governance and Partner Commitment) are conceptualized and operationalized at the organizational level. Here, aggregation is justified as the cut-off point is exceeded by 85% of computed R_wg values (M=.78, Median=.81). A paired-samples t-test reveals that there is no difference in means for Contractual Governance between buyers (M=4.03, SD=.66) and suppliers (M=3.86, SD=.67), while the buyer mean (M=3.03, SD=.73) for Partner Commitment is significantly lower than the suppliers’ (M=4.10, SD=.62), with a large effect size (t(46) = -8.47, p <.05) as indicated by the eta squared statistic (.61). This latter result suggests suppliers’ expression of a larger interest to maintain business with their preferred customer (see e.g., Blonska et al. 2013). We do not regard this as detrimental to analysis and aggregate Partner Commitment scores to the organizational level.

Table 4.2 Descriptive Statistics and Discriminant Validity (n=47)

<table>
<thead>
<tr>
<th></th>
<th>M (SD)</th>
<th>Cronbach α</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Team Creativity Climate</td>
<td>4.06 (.26)</td>
<td>.89</td>
<td>.82</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Contractual Governance</td>
<td>3.93 (.52)</td>
<td>.81</td>
<td>.37**</td>
<td>.91</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Partner Commitment</td>
<td>3.58 (.53)</td>
<td>.90</td>
<td>.25 n.s.</td>
<td>.15 n.s.</td>
<td>.95</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Creative Performance</td>
<td>3.75 (.32)</td>
<td>.87</td>
<td>.51**</td>
<td>.13 n.s.</td>
<td>.44**</td>
<td>.78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Market Turnover</td>
<td>2.91 (1.04)</td>
<td>n.a.</td>
<td>.23 n.s.</td>
<td>-.04 n.s.</td>
<td>.14 n.s.</td>
<td>.61**</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td>6. Business Turnover</td>
<td>2.77 (1.24)</td>
<td>n.a.</td>
<td>-.08 n.s.</td>
<td>-.13 n.s.</td>
<td>.20 n.s.</td>
<td>.36*</td>
<td>.22 n.s.</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

The square roots of AVE (√AVE) appear on the diagonal in bold.

** p < 0.01 * p < 0.05

DATA ANALYSES

Given the restricted degrees of freedom, hypotheses were tested using separate regression analyses (Boone and Hendriks 2009). Variables were added in a stepwise fashion to allow detailed observation of model fit improvement. In the first model predicting Creative Performance, only the control variables were added in a first step. Then the
independent variables *TCC*, *Contractual Governance* and *Partner Commitment* were added through forced entry in a second step. The interaction effects were computed using mean-centred predictor variables (Aiken et al. 1991) and entered in a third step (Table 4.3). In the second model predicting *Buyer’s* and *Supplier’s Sales Turnover*, the control variables were introduced in the first step, followed by the independent variables in a second step through forced entry (Table 4.4). The hypothesized indirect effects were tested using bootstrapping procedures suggested by Preacher et al. (2005) and Zhao et al. (2010). Modern mediation analysis requires the explicit estimation of indirect effects by means of inferential tests (Muller, Judd, and Yzerbyt 2005). We used the PROCESS macro developed by Hayes (2013) to facilitate the construction of bootstrap confidence intervals for statistical inference about the strength and direction of the hypothesized indirect effect. This simplifies readability of results and facilitates translation into practical implications (see e.g., Gibbs et al. 2011; Popan et al. 2010; Zhao et al. 2010). For the sake of conceptual integrity and consistency during analysis, we included all control and independent variables as covariates.

**Hypothesis Testing**

The empirical analysis of the relationships in the conceptual model provides support for five of the seven hypothesized relations (see Figure 4.2). *TCC* has a positive impact on *Creative Performance* ($\beta = 0.64, p<0.01$), providing support for H1. As expected, *Creative Performance* is a significant driver of sales turnover for buyers and supplier, thus supporting H2a and H2b. While the reported standardized coefficient is larger for *Supplier’s Sales Turnover* ($\beta = 2.36, p<0.01$) compared to the *Buyer’s Sales Turnover* ($\beta = 2.18, p<0.01$), more variance is explained in the *Buyer’s Sales Turnover* ($R^2 = 49\%$ vs. $R^2 = 21\%$). Counter expectations, *Contractual Governance* attenuates instead of strengthens the relationship between *Team Creativity Climate* and *Creative Performance* ($\beta = -1.05, p<0.05$). Hence, H3 has been rejected. No statistical support was found for *Partner Commitment* acting as a boundary condition, thus leading to a rejection of H4. Apart from the hypothesized effects, our results also show that both moderators have a significant direct impact on *Creative Performance*, which is negative for *Contractual Governance* ($\beta = -0.22, p<0.05$) and positive for *Partner Commitment* ($\beta = .41, p<0.01$). Overall, the full model containing all control, independent and moderating variables accounts for 41% of the variance in *Creative Performance*. 
## Table 4.3 Regression Coefficients\(^a, b\) for Creative Performance (n=47)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Creative Performance</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project duration (months)</td>
<td>-0.002 (n.s.) (.003)</td>
<td>0.001 (n.s.) (.002)</td>
<td>0.002 (n.s.) (.002)</td>
<td></td>
</tr>
<tr>
<td>Relationship length (years)</td>
<td>0.003 (n.s.) (.003)</td>
<td>0.002 (n.s.) (.003)</td>
<td>0.002 (n.s.) (.003)</td>
<td></td>
</tr>
<tr>
<td>Team Creativity Climate (H1)</td>
<td>—</td>
<td>0.70** (.15)</td>
<td>0.64** (.15)</td>
<td></td>
</tr>
<tr>
<td>Contractual Governance</td>
<td>—</td>
<td>-0.19* (.11)</td>
<td>-0.22* (.11)</td>
<td></td>
</tr>
<tr>
<td>Partner Commitment</td>
<td>—</td>
<td>0.35** (.11)</td>
<td>0.41** (.12)</td>
<td></td>
</tr>
<tr>
<td>Contractual Governance * Team Creativity Climate (H3)</td>
<td>—</td>
<td>—</td>
<td>-1.05* (.55)</td>
<td></td>
</tr>
<tr>
<td>Partner Commitment * Team Creativity Climate (H4)</td>
<td>—</td>
<td>—</td>
<td>0.36 n.s. (.43)</td>
<td></td>
</tr>
<tr>
<td>(F)</td>
<td>0.65 n.s.</td>
<td>6.56**</td>
<td>5.4**</td>
<td></td>
</tr>
<tr>
<td>(F\Delta)</td>
<td>—</td>
<td>28.39**</td>
<td>2.24(n.s.)</td>
<td></td>
</tr>
<tr>
<td>(Df)</td>
<td>2, 43</td>
<td>5, 40</td>
<td>7, 38</td>
<td></td>
</tr>
<tr>
<td>(SE)</td>
<td>0.32</td>
<td>0.25</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>Adjusted (R^2)</td>
<td>-0.02</td>
<td>0.38</td>
<td>0.41</td>
<td></td>
</tr>
</tbody>
</table>

The numbers in parentheses are standard errors.  
\(a\). Unstandardized coefficients are shown.  
\(b\). Significance based on one-tailed alternatives.  
** \(p < 0.01\) * \(p < 0.05\) \# \(p < .10\)

## Table 4.4 Regression Coefficients\(^a, b\) for Turnover (n=47)

| Independent Variables               | Buyer’s Turnover | Supplier’s Turnover |         |         |         |         |         |         |         |         |         |         |
|------------------------------------|------------------|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|                                    |                  |                     |         |         |         |         |         |         |         |         |         |
| Project duration (months)          | -0.003 \(n.s.\) (.009) | 0.001 \(n.s.\) (.007) | -0.006 \(n.s.\) (.011) | -0.007 \(n.s.\) (.010) |         |         |         |         |         |         |
| Relationship length (years)        | 0.030** (.011)   | 0.023** (.008)      | 0.010 \(n.s.\) (.014) | 0.003 \(n.s.\) (.012) |         |         |         |         |         |         |
| Team Creativity Climate            | —                | -0.38 \(n.s.\) (.51) | —       | -1.93** (.76) |         |         |         |         |         |         |
| Creative Performance \(H2a, H2b\) | —                | 2.18** (.42)        | —       | 2.36** (.31) |         |         |         |         |         |         |
| \(F\)                              | 4.08* (.42)      | 11.80** (.41)       | 3.22 \(n.s.\) (.27) | 3.91** (.31) |         |         |         |         |         |         |
| \(F\Delta\)                        | —                | 31.92** (.41)       | —       | 13.37** (.41) |         |         |         |         |         |         |
| \(Df\)                            | 2, 43            | 4, 41               | 2, 43   | 4, 41   |         |         |         |         |         |         |
| \(SE\)                            | 0.98             | 0.75                | 1.27    | 1.11    |         |         |         |         |         |         |
| Adjusted \(R^2\)                   | 0.12             | 0.49                | -0.03   | 0.21    |         |         |         |         |         |         |

The numbers in parentheses are standard errors.  
\(a\). Unstandardized coefficients are shown.  
\(b\). Significance based on one-tailed alternatives.  
** \(p < 0.01\) * \(p < 0.05\) \# \(p < .10\)
Mediation Analysis

Simple mediation analysis was conducted using Hayes’ (2013) ordinary least squares path analysis procedures. This nonparametric method is recommended over alternative approaches (Baron and Kenny 1986; Sobel 1982) and regarded to deliver more reliable results as it does not make assumptions about the distribution of the indirect effect (Gibbs et al. 2011). We calculated indirect effects on the basis of 10,000 bootstrap resamples whereby their significance is determined by examining bias-corrected and accelerated 90% confidence intervals (CIs) and ascertaining whether they contain zero; if they do not, the effect is considered significant (Table 4.5). For the indirect effect between TCC and Buyer’s Sales Turnover as well as Supplier’s Sales Turnover the CIs are entirely above zero (0.9912 to 2.5182 and 0.7250 to 2.6624), thus indicating mediation by Creative Performance. The insignificant path coefficient between TCC and Buyer’s Sales Turnover ($\beta = -0.38$, $p>0.10$) indicates that Creative Performance fully mediates the relationship. As the direct effect between TCC and Supplier’s Sales Turnover is significant ($\beta = -1.93$, $p<0.01$), Creative Performance accounts for some, but not all, of the relationship between these variables. In fact, the impact of TCC on Supplier’s Sales Turnover is only positive when it is channeled by creative performance. Overall, results provide full support for H5a and partial support for H5b. We will further comment on the theoretical and managerial implications of findings in the discussion section.

![Empirical Results](image)

**Table 4.5** Bootstrapping Simple Mediation Effects (n=47)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Effect</th>
<th>SE</th>
<th>90% Confidence Interval</th>
<th>Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate $\rightarrow$ Creative Performance $\rightarrow$ Buyer’s Turnover <strong>H5a</strong></td>
<td>1.5790</td>
<td>.4454</td>
<td>0.9912 to 2.5182</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Climate $\rightarrow$ Creative Performance $\rightarrow$ Supplier’s Turnover <strong>H5b</strong></td>
<td>1.4935</td>
<td>.5735</td>
<td>0.7250 to 2.6624</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Bias-corrected and accelerated bootstrapping confidence intervals.

**Figure 4.2** Empirical Results
DISCUSSION

Theoretical Contributions

Recent P/SM scholars advocate the distinction between the team or project level and the inter-organizational level when investigating buyer-supplier collaboration in innovation projects (Hoegl and Wagner 2005; Wagner and Hoegl 2006). Against that backdrop, the objective of this study was to unravel the creative process within joint innovation teams and to explain how contingencies in the inter-organizational sphere influence this team-internal process. Our study makes a number of important contributions to the literature. First, by adopting a climate perspective to conceptualize the collective sensemaking process of inter-organizational innovations teams, our study explicitly accounts for project/team-level issues between buyers and suppliers. According to our results, a team climate conducive to creativity is the strongest predictor of the extent to which teams will generate and select solutions that are adequate and effective to capitalize on an innovation opportunity. The regression coefficient found for TCC was larger than for the other main effects (see Table 4.3). Moreover, explaining about 40% of the variance in Creative Performance, the construct shows strong predictive validity. This empirical evidence fuels the debate on the salience of social and human issues for successful outcomes of joint innovation projects (Wagner 2010). Future studies can use our TCC scale to capture the team-internal processes of buyer-supplier innovation teams and investigate their impact on an array of other relevant performance outcomes such as timely project completion or market share growth (e.g., Ragatz et al. 2002).

Second, this study is the first to shed light on the causal sequence in which collective, creative efforts of inter-organizational project teams materialize in terms of sales turnover for both partner firms. Our results reveal that both firms will benefit from a creative climate in their joint innovation teams when the ideas they generate are novel, relevant, feasible, and specific. These findings might provide an explanation for why some studies analysing the effectiveness of supplier involvement in customer innovation projects produced ambiguous findings (see e.g., Hong and Hartley 2011; Koufteros et al. 2005; Petersen et al. 2005). Previous studies have mainly focused on the implementation of creative solutions instead of their generation and selection, also largely ignoring the role of suppliers in that process (Rosell and Lakemond 2012; Wagner 2012). Yet, the factors affecting the adoption and implementation of creative solutions are different from those that affect the generation and selection of ideas (Wang et al. 2008; Rietzschel et al. 2012). A conceptual distinction between creativity as novel, feasible, relevant, as well as specific solutions, on the one hand, and innovation as expected sales turnover, on the other hand, is hence crucial to capture cause-and-effect relationships accurately. Establishing the construct as a mediator of team processes provides a powerful, causal explanation for the complex, organizational phenomenon of supplier involvement in customer initiated innovation projects (Hayes 2013).
Next, we complement recent theoretical considerations concerning the influence of inter-organizational aspects on the team process of joint innovation teams with empirical evidence (Hoegl and Wagner 2005). Creativity has been described as the complex product of behaviour in a given situation, characterized by contextual as well as social influences (Woodman et al. 1993). Thus, accounting for such contextual influences in joint innovation teams, contractual governance and partner commitment were included as relevant boundary conditions at the firm level (Liu et al. 2009). Hypothesis testing indicates that contractual agreements inhibit collective team effort for creative solution-finding. This and other findings were further discussed during a three-hour round table with seven professionals (5 males, 2 females) working at companies participating in our research (fast moving consumer goods, digital printing, engineering services, oil and gas, consultancy, construction, chemical). All participants held middle- or senior-level positions, had at least 15 years of working experience in purchasing or management consulting, and lead or work with teams on a daily basis. After the professionals were briefed about our research as well as results, we invited them to comment on our findings in an open discussion format. A research assistant kept minutes which were complemented with further notes from memory by two authors immediately after the workshop. First, there was general consensus that “contracts can be an enabler or a handicap, depending on the point when you introduce them”. Participants were however divided in their opinion about the optimal timing of contractual agreements. Some suggested to clarify contractual issues immediately during the kick-off to safeguard against the loss of proprietary information. Others favoured late agreements, arguing that legal discussions at the start of a collaborative initiative would stifle creativity. Future research should shed further light on the timing of contracts. Second, participants stressed the importance of “tailoring the contract to the relationship […] to reach something relevant to the business”. One participant remarked that in a recent innovation project “the only thing clearly discussed was IP, because it was really difficult to distribute the cake already business-wise”. Third, the notion of incomplete contracts (Chen 2000) resonated well with practitioners as an approach to governing joint innovation projects. During the discussion, there was general consensus that innovation projects involving external parties are characterized by high ambiguity and outcome uncertainty. For that reason, “KPIs are difficult to establish” as the characteristics and specification of the ideal solution are not known in advance. Further pointing to the adverse effects of contracts in innovation projects, one participant explained that “very strict rules and rigid procedures” laid out in contracts can be reason for low creativity. As “creativity cannot be forced, but needs to organically grow from the people themselves”, deliberately building in slack into contractual agreements can be an effective means to increase flexibility in the execution of a collaborative project (Zheng et al. 2008). Alto-

14 See the doctoral dissertation of Regien Sumo (2014) for a more detailed discussion about the role of (in)complete contracts during inter-organizational innovation relationships.
CHAPTER 4

together, the input collected from practitioners insinuated the possibility of a curvilinear impact that contracts have on the relationship between team climates and performance. Future research should substantiate this post-hoc “too much of a good thing” consideration with further theory (see e.g., Wang et al. 2008; Wuyts and Geyskens 2005) and explicitly hypothesize such adverse effects of contracts.

Moreover, we appeal to the emerging academic and managerial debate on the role of relational aspects for successful completion of joint innovation projects (Bstieler 2006). Commitment between partner firms does not affect the relationship between team climate and subsequent performance, counter our expectations. Instead, partner commitment has a direct, positive impact on the team’s creative performance. This finding reinvigorates recent theoretical debates about the meaning and benefits of attaining preferred customer status with suppliers (see e.g., Baxter 2012; Schiele et al. 2012; Ellis et al. 2012). Buying firms should hence continue their investments into activities and relationships with key suppliers so as to increase their willingness and commitment to share technological innovations, without creating overdependence. Further extending on the literature concerning the interaction between issues in the organizational sphere and the project-level (Hoegl and Wagner 2005; Wagner and Hoegl 2006), we discussed the impact of contractual and relational issues in the round table session. Participants unanimously criticized the overemphasis of contracts which are “more concerned with knowledge and competences” and remark that “what is missing is training on the more social and soft skills” instead. Further, there is a “tendency to fix specifications, templates and guidelines first, [...] stick to these very technocratic measures and get lost in them.” The ultimate consequence of this is that managers “oftentimes forget the relationship with the partner and the people in it – and this is what is really important”. Altogether, these insights support a two-fold approach toward managing joint innovation project teams, carefully balancing protection of proprietary interests against establishment of trust and commitment with the partner company (Arranz and Arroyabe 2012; Bstieler 2006).

Managerial Implications

Our findings provide procurement and account managers of the buying and supplying firm as well as project members in co-innovation teams with a number of relevant, actionable implications. First of all, our findings invite top management to explicitly distinguish between and attend to micro- as well as macro-level issues when managing co-innovation partnerships. Even though project teams maintained with one supplier are exposed to the same underlying conditions at the macro-level (i.e., contract, relationship quality), the micro-level climate within the project teams might vary substantially. Against that background, procurement and account managers could focus their immediate attention and optimally allocate resources by micro-managing joint innovation teams. Specifically, our results show that fostering a creative climate in the actual
project team might provide an effective means to take quick, corrective actions for successful project outcomes. At the project-level, where actual work is carried out on a daily basis, people are more accessible and can be influenced involving little time and resource investments. Changing the contractual and relational conditions that characterize the partnership between a focal buying firm and its supplier, on the other hand, is more cumbersome. Relational commitment to a specific supplier partner, for instance, is built gradually over time and demands the buying firm to invest in supplier-specific adaptations (Walter 2003). Given the large influence of team climates on the quality of ideas, management could achieve desired outcomes quickly by devoting attention to the micro-management of joint innovation teams.

Next, managers should leverage the salience of team-level issues and proactively encourage as well as facilitate socialization between buyer and supplier employees. Project owners can assume an important facilitating role as the team goes through the norming, storming, performing phase, helping team members to become comfortable with each other quickly and contributing to the origination of a creative team climate. Face-to-face kick-off meetings can create the necessary excitement and momentum to enable team members unlocking their creative capacity. In addition, milestone meetings can be used to share and celebrate small or incremental successes to sustain enthusiasm and engagement within the team throughout the project. In some instance, the mere creation of awareness for and importance of developing a shared understanding within the team can already help project members generate and select the right creative ideas.

Our findings offer valuable lessons for shaping and defining a new role for procurement in companies’ innovation efforts. We expand on and back observations for an increased involvement of procurement for setting the right contractual and relational conditions during supplier-driven innovation (Schiele 2006, 2010; Walter 2003; Wynstra et al. 1999). First, managers are advised to craft contractual agreements with great care as contracts can create rigid relationships and thus hinder innovation (Hart 1989). Following the principles of incomplete contracts, procurement managers involved in joint innovation projects should design underlying agreements that allow adjustments to changing circumstances and discretion over how to carry out work (Bernheim and Whinston 1996; Luo 2002). In addition, less control should be exerted when project teams are explicitly asked to be creative (Thompson 1965). Second, our findings show that the presence of good relationships with suppliers increases the likelihood of joint innovation success. Buying companies should thus keep investing in Supplier Relationship Management (SRM) programs to manage and maintain trustful, committed relations. Further, when selecting suppliers for SRM programs, and especially for innovation partnerships, buyers should prioritize suppliers with whom they already maintain a well-performing, long-term business relationship. Altogether, our findings reflect the changing role of procurement from supplier selection to idea selection and from relationship broker to idea broker.
Finally, we introduce a set of dimensions on which managers can assess whether an idea is fit for the context, fit for application, fit for implementation. Equipping project managers with adequate KPIs improves the generation, detection and selection of strategically and financially potent ideas. Our results show that teams who generate novel, relevant, feasible, and specific solutions will also generate expected or higher than expected sales turnover. An essential question managers ask when selecting an idea for the commercialization stage is, for instance, whether they have the right competencies, capabilities, disciplines in-house to implement the new idea or solution. Another aspect is the complexity of ideas: if something is complex it communicates that it is difficult to adopt by other people, thus reducing the chance of successful implementation. In addition, we provide procurement and account managers with insight on the benefits accruing from collaborative innovation projects. The good news is that both partnering firms report sales turnover, thus providing equal incentive for both partners to participate in such ventures. On a more critical note, however, merely 21% of the business turnover of suppliers with buyers is determined by the extent to which the solution is creative. This suggests that other factors (e.g., customer-specific adaptations) drive supplier’s sales turnover. The turnover of buyers, on the other hand, is largely driven by the proposed solution itself ($R^2 = 49\%)$. These insights invite buyers and suppliers to more value-chain thinking. For instance, buyers could customize and optimize their communication to suppliers for managing expectations, sharing and celebrating success, or thanking suppliers for their contribution to their commercial success. This might make suppliers more receptive towards accepting solutions even if it means that they will only benefit once costs of implementing it are recouped.

Limitations and Suggestions for Further Research

Every study is subject to some limitations, which are shortly discussed in terms of future research opportunities below. First, even though we carefully orchestrated the collection of dyadic team-level data, there are some issues compromising the quality of our unique data set. Complete responses from all project members for all teams, for instance, would have strengthened reliability of our data. In anticipation of respondent fatigue and incomplete team response, we worked with referent-shift items to capture collective perceptions despite incomplete team response (Chan 1998). Resource and time constraints restricted data collection to one point in time. Future studies should aim for longitudinal research designs to complement our cross-sectional study with insights on long-term effects such as inertia, learning orientation, and any feedback loops resulting form that (see e.g., Villena et al. 2011).

Second, contractual governance was measured only by means of three items. Thus, no light could be shed on reasons underlying the negative effect found for contractual governance. Recently, Clauß (2012) suggested that a high degree of formalization, if legitimated, can also lead to innovation. Against that background it is worthwhile to
investigate whether different contract types or clauses have differential impacts. The fact that other types of contractual governance, process control and outcome control, as recently investigated by Sumo (2014) do not reveal any significant effects warrants additional research. It seems there are different contractual mechanisms at work when investigating an inter-organizational innovation relationship at the team level of analysis—or contractual mechanisms such as process and outcome control have a different impact. Also, future research should follow a longitudinal design strategy to account for dynamic contracting effects. Uncovering and delineating such effects would add to scholars’ as well as managers’ understanding about how contracts can be adapted throughout an innovation project for introducing more flexibility, greater efficiency and thus better performance.

Third, we did not account for joint effects of partner commitment and contractual governance on team-level processes. In their recent study Cao and Lumineau (2015), for instance, revealed a complementary effect in vertical inter-organizational relationships. Future research could account for this by considering an alternative setup of the nomological network including, for instance, moderated moderation (see Hayes 2013). In addition, studies on buyer-supplier collaboration should juxtapose further organizational contingencies to gain more insight about their influence on team-level processes and performance.
The majority of work in this chapter has been done by the author of this dissertation. Feedback from the promotors and co-promotor was implemented during several revision rounds.
SYNOPSIS

This dissertation starts from the premise that procurement organizations must shift gear to maintain their status as a strategic partner and creator of enterprise value. That is because drastic changes in the business environment including technological developments, sustainability pressures, tight supplier margins, and fiercer competition for supply have made it more difficult to generate the expected savings. Realizing that they might be reaching the limit of their ability to reduce cost and thus risk losing their strategic impact (Hackett Group 2014), mature procurement organizations have been looking for new and meaningful ways of meeting targets and creating additional value (IBM 2005). Finding, selecting, contracting, and managing suppliers to source materials and services necessary to run the business at the possibly lowest cost is still the core task of procurement (van Weele 2010). However, confronted with rapidly occurring changes in the environment and competitive pressures, procurement must transform and augment the manner in which it fulfills this task. The adoption of a more collaborative approach towards dealing and communicating with both suppliers and internal stakeholders has helped procurement professionals to be viewed as business partners rather than simple buyers (IBM 2005). By virtue of developing a more holistic business perspective and an understanding of internal stakeholder needs, procurement has convincingly expanded its value proposition beyond cost savings. World-class procurement organizations create bottom- and top-line value by reverse-engineering cost structures together with internal stakeholders, maintaining good relationships with supply partners, proactively tapping supplier innovation, and identifying new sources of revenue (Fuchs et al. 2013; KPMG 2015). As the purchasing and supply environment becomes more volatile, uncertain and competitive (Deloitte 2016), the creation of such value demands a skill set different from the profile of a typical buyer. Latest practitioner talk and first advancements of scholars points to the notion of creativity as the key to value creating procurement. Through creative thinking and problem-solving together with internal stakeholders and suppliers, buyers and non-procurement stakeholders can pool and leverage their expertise to develop value-adding strategies and solutions (Giunipero et al. 2005). But extant procurement research lacks a theoretical perspective on collective creativity in procurement. To address this dearth of research, three empirical studies were conducted to find answers to the following research questions.

RQ 1: How to conceptualize and measure collective creativity in sourcing teams?

Chapter 2 describes the systematic development of a scale for capturing the process by which individuals arrive at a shared understanding of how to creatively develop sourcing strategies together as a team. Drawing on work-unit climate literature and recent insights on sourcing teams (Schneider et al. 2013; Driedonks et al. 2010), TCC is conceptualized as team members’ shared perceptions of policies, procedures, practices they pursue to attain desired outcomes in creative ways. Following established scale devel-
opment protocols (Churchill 1979; De Vellis 1991; Netemeyer et al. 2003), a conceptually valid, reliable and distinct measurement scale for capturing TCC is developed. A test of predictive validity confirms the inextricable link between team-level climates and strategically-focused output found in previous studies (Schneider et al. 1992): TCC captures a great deal of explained variance in the actual creative performance of sourcing teams. Valid and reliable measurement of the dynamics inherent to creative work in sourcing teams helps to advance insights on creative sourcing team behaviour from anecdotes to testable theory (van Weele and van Raaij 2014). By describing the nature of the creative process of sourcing teams, specifying a measurement instrument, and establishing its predictive power, this first empirical study establishes the case for creativity in procurement.

**RQ 2: How does TCC facilitate sourcing team performance?**

Chapter 3 provides a first application and empirical assessment of the developed TCC construct for explaining the performance of sourcing teams. Sourcing teams are tasked with the formulation of sourcing strategies that create value for the business and its stakeholders (KPMG 2015; Trent and Monczka 2005). Confronted with intensifying competition and more complex supply networks, their main challenge lies in the blending of diverse knowledge bases in novel and meaningful ways to reduce (total) costs instead of price. A collective perception conducive to the recombination of knowledge and closer integration with other business functions are therefore an indispensable element (Faes et al. 2001; Giunipero et al. 2005). Positioning TCC as a focal, mediating construct within a conceptual model reveals that a climate conducive to creativity helps team members translating their capabilities into creative sourcing strategies with bottom-line impact. Empirical results indicate that creative capabilities are somewhat more effective than task-related capabilities in establishing a creative climate in sourcing teams. Results show that teams with a creative climate work out solutions that are more creative as is indicated by a higher average score on the dimensions of novelty, relevance, feasibility, and specificity. Creative performance, in turn, positively impacts bottom-line sourcing performance in terms of, for instance, cost savings and working capital improvements. Besides evidence for TCC as a key driver of sourcing performance, empirical results give insights with respect to the moderating role of two contextual team factors, namely leader behaviour and staffing. The positive impact of team members’ task expertise, for instance, is leveraged when sourcing teams are staffed with employees from diverse functional backgrounds. Counter expectations, facilitative leadership behaviour hampers the translation of creative capabilities into a creative climate. As the role of leaders is somewhat less straightforward, future research avenues are suggested to further elucidate the exact impact of leadership on TCC in sourcing teams.
RQ 3: How is TCC in co-innovation teams influenced by factors at the inter-organizational level during the generation and selection of creative ideas for commercialization?

Chapter 4 provides an assessment of TCC’s applicability to co-innovation teams. The joint creation of value with suppliers beyond contractual obligations through innovation is a primary focus of global CPOs (57 %) (State of Flux 2012). However, there is accumulating evidence that many companies are failing to do so (Wagner 2012). Extant studies on supplier involvement in customer innovation projects offer ambiguous results (Petersen et al. 2005; Koufteros et al. 2005; Hong and Hartley 2011). Noting that these studies lack attention of team-level issues in the fuzzy front end (FFE) of innovation (Hoegl and Wagner 2005; Wagner, 2012), the final study in this dissertation advances the understanding of behaviour, actions and interactions between buyers and suppliers in co-innovation teams. TCC is introduced and validated as the main driver of creative performance. Empirical results suggest that micro-managing an innovation partnership on the project level – facilitating the interaction process of individuals carrying out the actual work within teams – is as crucial as ensuring a fit between the partnering organizations. In terms of conditions at the inter-organizational level (i.e., macro-managing), empirical results reveal that contractual governance and partner commitment influence the creative team process in a more nuanced way than initially expected. Counter expectations, contracts inhibit creative efforts – both directly and indirectly through moderation. Partner commitment has a positive impact on creative performance with no moderating impact. Moreover, study results show that buyers and suppliers benefit from creative climates in co-innovation teams in terms of sales turnover – albeit to different extents. Suppliers report less sales turnover, possibly due to additional costs or customer-specific adaptations. By adopting a value chain perspective, buyers could convince suppliers to accept short-term sacrifices and accrue more sustainable benefits in the long-run, thereby alleviating or preventing conflicts over unfair distribution of gains.

CONTRIBUTIONS TO LITERATURE

This dissertation draws on the organizational behaviour domain, combining insights on creativity and teaming, to fill a research void associated with creative work behaviour in the PSM context. An important contribution is hence the extension of research on sourcing team effectiveness and buyer-supplier innovation teams through grounding in behavioural theory. Learning from relevant theoretical perspectives outside the PSM field is essential to further evolve as a research discipline. Applying outside perspectives is especially helpful when current PSM theories and concepts are inadequate for properly understanding and explaining pressing PSM phenomena. Creative team processes constitute such a phenomenon. Connecting to organizational behaviour litera-
ture in general and work-unit climates in specific contributes to the emerging debate on behaviour in sourcing and co-innovation teams.

We thereby also contribute – albeit somewhat implicitly – to the body of literature on creativity as well as teaming. First, we follow up recent claims about creativity being a social phenomenon with empirical evidence. Specifically, our results demonstrate that when individuals collaborating on creative tasks develop a shared understanding of how to work together as a team, a collective approach to creativity can be beneficial. We encourage substantiation of our findings and suggest the TCC construct to be applied in a diverse range of work settings where creative solution-finding constitutes relevant work behaviour (e.g., R&D teams, student teams, sales representatives). Second, we contribute to the literature on teaming by adding to the debate on interaction processes taking place among team members. Adopting a work-unit climate perspective appears as an effective means to capture how teams members develop a shared understanding of an underlying task. We also identify the drivers of such sensemaking and test the moderating impact of relevant contextual factors (e.g., capabilities, leadership, team composition, contractual pressures, and relationship quality).

**IMPLICATIONS FOR PRACTICE**

All in all, the three empirical studies in this dissertation lend weight to creativity as a key to value creating procurement. Buyers create bottom-line and top-line value together with internal and external stakeholders in sourcing teams and co-innovation teams by virtue of a creative team climate. Valuable lessons can be drawn for the following stakeholders.

*For CEOs*

The central message to CEOs is to not give up on procurement as a strategic partner once cost savings begin to diminish. It is the natural consequence as there is only a certain amount of cost-cutting potential in the organization and the supply base. Instead, CEOs should look for ways of integrating procurement better with the rest of the business, inviting buyers to join sourcing teams and co-innovation teams. Alignment between top management team, middle management and teams is central to effective strategy formulation and implementation (Raes, Heijltjes, Glunk, and Roe 2011). Top-management should therefore be in a constant dialogue with CPOs and their procurement staff to better understand where and how they can add value beyond cost savings. Once potential for value creation is identified and project teams are formed, top management should support involved stakeholders with resources and consultation. Advocating and encouraging creative thinking and problem-solving from the outset of a project can help members to achieve desired results.
For CPOs

For CPOs the main challenge lies in walking the tightrope between cost cutting as a basic requirement and value (co)creation as an additional service. Delivering on the basics of cost-cutting is a strategic priority for 85 per cent of CPOs (Hackett Group 2016). Continuous savings, if only incremental, will earn procurement the trust of CEOs and internal stakeholders. Thus, meeting annual saving targets should always be high up on the agenda of CPOs. In face of more dynamic, uncertain and competitive purchasing and supply environments, CPOs should encourage their staff to pursue solutions off the beaten paths, exploring new and unfamiliar ones together with business partners within and outside organizational boundaries. As this requires a more holistic view of the business, CPOs should recruit buyers with a broader business perspective, creative problem-solving abilities, and strong interpersonal skills (Giunipero et al. 2005). Only when procurement organizations fulfill their role as reliable generator of cost savings, can CPOs credibly broaden the function’s value proposition. Once, buyers are involved in additional value creation activities for improving the bottom- and top-line, CPOs should make procurement’s contribution more visible. CPOs need to become self-marketers whose job is to credibly sell procurement’s augmented value proposition to business partners.

For Team Members

Developing the strategies and solutions to capitalize on a value creation opportunity is ultimately the responsibility of sourcing and co-innovation teams. The main benefit of cross-functional and cross-enterprise teams, namely the pooling and merging of diverse knowledge bases and expertise relevant for creating value, poses difficulties at the same time. In order to devise value-adding strategies and solutions, team members must develop a shared understanding for effectively working together as a team (Carr and Pearson 2002; Moses and Ahlstrom 2008). This dissertation offers guidance concerning a set of behaviours that team members can adopt to overcome traditional functional or organizational borders. Irrespective of the context, internal sourcing teams or co-innovation teams, individual members can incorporate and promote creativity as a guiding theme in project work by building on each other’s ideas, encourage each other to try new things or envisioning alternate scenarios. Furthermore, taking each other’s contributions serious, openly sharing their thoughts, thinking across functional boundaries, and engaging each other in constructive discussions will enable team members to collectively capitalize on potent value opportunities.
FUTURE RESEARCH AVENUES

The empirical studies described in this dissertation constitute a comprehensive analysis surrounding the emerging phenomenon of creativity in procurement. Though providing a first theoretical basis, more research is needed to exhaustively cover additional issues and address some limitations. As a consequence, some questions remain unanswered while new ones emerge. Irrespective of their source, these questions all provide valuable opportunities for further research on creativity in procurement. These are discussed in more detail below.

First, scholars should invest in a systematic assessment of the specific sourcing situations, projects or tasks in which TCC is most applicable and relevant for attaining superior outcomes. Insights as to which purchasing categories in Kraljic’s (1983) purchasing portfolio benefit most from a creative approach towards sourcing would enable more effective allocation of resources and more efficient deployment of sourcing teams. Likewise, companies would benefit from research investigating whether creativity as an approach to procurement is applicable at various levels of purchasing maturity; maybe value creating procurement through creativity is the prerogative of highly mature purchasing organizations. Sourcing professionals collaborate more frequently with colleagues and suppliers in virtual teams through a multitude of channels (e.g., social media, Skype, video-conferencing, collaborative platforms). The contextual factors governing effective team functioning in these team settings (i.e., spatial distance, communication frequency) might also have implications for the origination of creative team climates. Further research should investigate the emergence and effectiveness of creative processes in virtual sourcing teams.

Second, competition and value creation increasingly takes place between entire supply chains instead of companies. As this calls for even more collaboration with suppliers to spur innovation efforts (State of Flux 2012), scholars should identify additional contextual factors and investigate how they influence the behaviour and interaction of buyers and suppliers in co-innovation teams (Wagner 2010). Specifically, an effort should be made to specify the role and relevance of contractual versus relational governance for team-level processes in an inter-organizational context. As scholars make a distinction between radical and incremental innovation, it can be of added value to explore whether TCC is of particular relevance for these two types of innovation. Furthermore, buyers increasingly segment the supply base according to strategic fit, criticality of supply, business objectives, or sheer trade volume. Further research could also investigate whether a creative approach pays off in non-innovation relationships where the focus is, for example, on continuous improvement, risk mitigation, securing supply or cost reduction.

Third, future research should investigate how managers can encourage more creative thinking and problem-solving in teams. Managers and team leaders can choose from a vast array of creativity techniques, tools, and instruments to induce more crea-
tive behaviour and achieve superior results. Using a quasi-experimental design, involving a control group and carefully planned interventions, future research should investigate the effectiveness of framing during the project brief, purposeful team staffing, and different leadership styles for evoking collective creativity in sourcing and co-innovation teams.

Fourth, the findings presented in Chapter 4 suggest that the implications of co-innovation can be better understood when adopting a value chain perspective. Hansen’s and Birkinshaw’s (2007, p.2), for instance, suggest that “managers should adopt a tailored, end-to-end approach to generating, converting, and diffusing ideas”. Following that train of thought, collaborative innovation efforts might strongly benefit from the involvement of end-customers during the early innovation stage where ideas are generated and evaluated with respect to potential impact and prospective success in the market. Future research could borrow from recent insights on buyer-supplier-customer triads to learn about the interactive nature of innovation in triadic relationships (Wynstra, Spring and Schoenherr 2013, 2015). In that context, TCC might provide a starting point for capturing the creative process and can be adjusted to suit the unique circumstance and dynamics arising in the context of triadic innovation relationships between suppliers, buyers and end-customers.

FINAL THOUGHT

Reflecting upon the larger context, creativity as a key to value creating procurement appears to be only one part of the story. A recent report by Accenture (Nowosel, Terrill, and Timmermans 2015) on the trend towards accelerating digitization predicts that digital technologies will revolutionize the procurement organization and the profile of procurement professionals in the coming five to seven years. Among the far-reaching effects are, for instance, the automation of many tactical and some strategic activities, the implementation of e-procurement systems and a reduction of procurement staff. Under these premises, the question arises whether procurement of the future will not just be an algorithm. However, tracing the origin of this algorithm, one will inevitably and ultimately end up with people. Even if large parts of procurement and the business processes will be automated, guided by some form of exhaustive algorithm, it is people who will construct and develop this same algorithm. Smart industry, the internet of things and industry 4.0 are all great tools and concepts expected to spur economic growth and enhance the industrial development of entire continents. But they will never entirely replace human brains. In fact, uniquely human skills, such as knowledge, dexterity, and creativity are expected to only increase in value as routine tasks are progressively automated (Look 2016). However, the ever continuing quest for efficiency improvement of procurement processes (i.e., sourcing, supplier relationship management, purchase-to-pay,) seems to suppress the much-needed creativity and innovation
to respond to the demands of creating value through procurement activities. Some companies formalize and automate their sourcing processes (e.g., e-sourcing, e-auction, e-contract management), other companies implement principles of continuous process improvement (i.e., LEAN and Six Sigma) in their Procurement department; and yet other companies reduce their procurement staff in order to ‘do more with less’. This push for increasing procurement process efficiency is not without controversy. We have a genuine and growing concern this will restrict the freedom, personal initiative and creativity of procurement professionals required for generating and selecting creative ideas for value creation (effectiveness). In the end, it will be highly-educated, specialized people who are able to recognize the connection between cause and effect and then act on this recognition by taking pre-emptive decisions, developing tools, and devising long-term strategic plans for attaining desired outcomes. With this general outlook, it is safe to assume that creativity as the key to value creating procurement is not just a trend of our time. On the contrary, creativity is here to stay!
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APPENDIX A

Theme Coding and Item Formulation
<table>
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<tr>
<th>Rank</th>
<th>Mentions</th>
<th>Theme</th>
<th>Interview Quotes*</th>
</tr>
</thead>
</table>
| 1    | 5 experts| Challenge                     | “put people out of comfort zone”  
“out of comfort zone, get out side the box”  
“allow yourself to become uncomfortable”  
“come out of comfort zone”  
“force each other to become uncomfortable”  
“accept change to get forward”  
“willingness to do new things”  
“challenge the status quo”  
“safe people”  
“fall back into old patterns, frameworks and behavior” |
|      |          |                               | Within our team we attempt to become comfortable with the unfamiliar and unknown.  
In our team we do not feel constrained by our current and usual work processes.  
As a team we accept change to get forward. |
| 2    | 5 experts| Openness towards others       | “full understanding of the other side”  
“see other people’s view”  
“remain open for other views”  
“challenge to be open to other people”  
“silo-thinking”  
“closed mind” |
|      |          |                               | In our team we are open for each other’s views.  
Within our team we attempt to break out of silo-thinking. |
| 3    | 4 experts| Team Creative Activities      | “share thoughts”  
“move yourself, trying to see what the people need to function creatively”  
“testing and discussing the idea”  
“build on each other’s ideas”  
“convince by argument”  
“challenge each other in the right way”  
“really work out ideas”  
“build on each other’s ideas”  
“you need interaction”  
“need to get sponsors for your ideas”  
“bring in your bit of knowledge and insight”  
“champion and support ideas of others”  
“exchanging viewpoints” |
|      |          |                               | In our team we cater to each other’s needs for thinking and working creatively.  
In our team we build on each other's ideas.  
Championing and supporting each other’s ideas is an integral part of how we work as a team.  
In our team we involve each other in constructive discussions. |
| 4    | 4 experts| Team Conduct                  | “people are able to say what they are thinking”  
“respect other people’s views”  
“respect each other’s contributions”  
“agreement to disagree”  
“being constructive”  
“open manner of communicating”  
“rudeness and picking on other people’s ideas”  
“rant about other’s ideas”  
“overly confrontational – as opposed to direct – people” |
|      |          |                               | In our team we openly share our thoughts without intimidation.  
Respecting each other’s contributions is a cornerstone of our teamwork.  
In our team it is okay to disagree with each other.  
Ranting about each other’s ideas is something we avoid in our team. |
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<tr>
<th>Rank</th>
<th>Mentions</th>
<th>Theme</th>
<th>Interview Quotes*</th>
<th>Initial Item</th>
</tr>
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<tbody>
<tr>
<td>5</td>
<td>3 experts</td>
<td>Team Atmosphere</td>
<td>“trust”</td>
<td>Within our team we feel we can rely on each other.</td>
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<td></td>
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<td>“having fun part of trust”</td>
<td>In our team we avoid behaviors that are destructive towards a trustful environment.</td>
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<td>“good positive atmosphere”</td>
<td>As a team we have fun while working together.</td>
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<td>“free thinking environment has no boundaries”</td>
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<td>“very open environment”</td>
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<td>“emotional safety”</td>
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<td></td>
<td>“behaviors that are destructive towards a trustful environment”</td>
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<tr>
<td>6</td>
<td>3 experts</td>
<td>Perspective-taking</td>
<td>“see things from a different angle”</td>
<td>In our team we always try to put ourselves in the shoes of our fellow team members.</td>
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<td>“ability to see/identify the possibility”</td>
<td>As a team we constantly strive to consider issues from all possible angles.</td>
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<td>“ability to see beyond borders”</td>
<td>There is no room for “I know it all” experts who cannot think across boundaries in our team.</td>
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<td>“people with wider scope”</td>
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<td>“nerds with mindcuffs”</td>
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<td>“strong-opinionated people”</td>
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<td></td>
<td>“experts who cannot think across boundaries”</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>3 experts</td>
<td>Team Cohesion</td>
<td>“levelling…everyone gets the feeling, in here there is no director, here is no</td>
<td>In our team everyone’s voice has the same weight.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>assistant…in here, there are just colleagues with a goal”</td>
<td>Within our team we do not perceive any hierarchical differences.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“part of the respect is to look at all members as being that whole person”</td>
<td>In our team we take everyone’s contributions seriously.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“some people get in there and what they say weighs more”</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>“experts who know everything”</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>3 experts</td>
<td>Risk-taking</td>
<td>“people can take risks”</td>
<td>Within our team we are willing to take risks.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“take a kind of a risk”</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“we do not need risk-averse people”</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>2 experts</td>
<td>Team Vision</td>
<td>“share a vision, find each other in that common ground”</td>
<td>In our team we have a common ground of understanding to work from.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“get a clear idea of the direction/get shared vision”</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>2 experts</td>
<td>Task-related Creativity</td>
<td>“you need a sort of creativity which is connected to the case you work on”</td>
<td>Within our team we make sure that discussions are connected to our specific task.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“specific enough, practical enough to be picked up on”</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“it has to connect to what you are looking for”</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“coming with examples or proposals which cannot be implemented or are too far</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>fetched to be relevant”</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“you start talking about a subject and then suddenly you offer everybody to give</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>their ideas and you get bombarded by all this garbage ideas, you get lost”</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>2 experts</td>
<td>Team Autonomy</td>
<td>“team sets the rules for themselves”</td>
<td>In our team we set the rules of engagement for ourselves.</td>
</tr>
<tr>
<td>12</td>
<td>1 expert</td>
<td>Work Ethic</td>
<td>“very focused”</td>
<td>As a team we are more proactive rather than reactive, i.e. there is no need to push people.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“working quite hard”</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“people are more proactive rather than reacting”</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“no need to push people”</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“people want to get going with what they are inspired of”</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“people deliver on time”</td>
<td></td>
</tr>
</tbody>
</table>

*quotes in italic represent a negative facet of the respective dimension
APPENDIX B

Item Deletion
### Appendix B: Item Deletion

<table>
<thead>
<tr>
<th>Stage</th>
<th>Item Generation</th>
<th>Item Refinement</th>
<th>Scale Purification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Source/Method</strong></td>
<td><strong>Literature Review</strong></td>
<td><strong>Rating and Modification by Judges</strong></td>
<td><strong>Pilot testing (n=120)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Expert Interviews</strong></td>
<td><strong>Final Judging by Scale Developers</strong></td>
<td><strong>Exploratory Factor Analysis</strong></td>
</tr>
<tr>
<td><strong># of Items</strong></td>
<td>27</td>
<td>24</td>
<td>9</td>
</tr>
<tr>
<td>1</td>
<td>Within our team we attempt to become comfortable with the unfamiliar and unknown.</td>
<td>Within our team we are comfortable with exploring unfamiliar or unknown ideas and perspectives.*</td>
<td>Within our team we are comfortable with exploring unfamiliar or unknown ideas and perspectives.</td>
</tr>
<tr>
<td>2</td>
<td>In our team we do not feel constrained by our current and usual work processes.</td>
<td>In our team we allow ourselves to depart from our routine work processes and practices.*</td>
<td>low loadings and/or high cross-loadings</td>
</tr>
<tr>
<td>3</td>
<td>As a team we accept change to get forward</td>
<td>As a team we welcome radical change.*</td>
<td>low loadings and/or high cross-loadings</td>
</tr>
<tr>
<td>4</td>
<td>In our team we are open for each other’s views.</td>
<td>In our team we are open to each other’s views and ideas.*</td>
<td>In our team we are open to each other’s views and ideas.</td>
</tr>
<tr>
<td>5</td>
<td>Within our team we strive to break out of silo-thinking.</td>
<td>Within our team we strive to think across departmental boundaries.*</td>
<td>Within our team we strive to think across departmental boundaries.</td>
</tr>
<tr>
<td>6</td>
<td>In our team we cater to each other’s needs for thinking and working creatively.</td>
<td>In our team we support each other in thinking and working creatively.*</td>
<td>low loadings and/or high cross-loadings</td>
</tr>
<tr>
<td>7</td>
<td>In our team we build on each other’s ideas.</td>
<td>Building on each other’s ideas is an integral part of how we work as a team.*</td>
<td>Building on each other’s ideas is an integral part of how we work as a team.</td>
</tr>
<tr>
<td>8</td>
<td>Championing and supporting each other’s ideas is an integral part of how we work as a team.</td>
<td>too closely related to item 7</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>In our team we involve each other in constructive discussions.</td>
<td>In our team we actively seek out each other for constructive discussions.*</td>
<td>In our team we actively seek out each other for constructive discussions.</td>
</tr>
<tr>
<td>10</td>
<td>In our team we openly share our thoughts without intimidation.</td>
<td>In our team we openly share our thoughts without fear of rejection.*</td>
<td>In our team we openly share our thoughts without fear of rejection.</td>
</tr>
<tr>
<td>11</td>
<td>Respecting each other’s contributions is a cornerstone of our teamwork.</td>
<td>Respecting each other’s contributions is a cornerstone of our teamwork.</td>
<td>low loadings and/or high cross-loadings</td>
</tr>
<tr>
<td>12</td>
<td>In our team it is okay to disagree with each other.</td>
<td>In our team it is okay to disagree with each other.</td>
<td>high cross-loading</td>
</tr>
<tr>
<td>13</td>
<td>Ranting about each other’s ideas is something we avoid in our team.</td>
<td>too negative and extreme</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Within our team we feel we can rely on each other.</td>
<td>too general, not specific to creativity</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>In our team we avoid behaviors that are destructive towards a trustful environment.</td>
<td>In our team we promote behaviors that are conducive towards a trustful environment.*</td>
<td>In our team we promote behaviors that are conducive towards a trustful environment.</td>
</tr>
<tr>
<td>16</td>
<td>As a team we have fun while working together.</td>
<td>As a team we have fun while working together.</td>
<td>low loadings and/or high cross-loadings</td>
</tr>
<tr>
<td>Stage</td>
<td>Item Generation</td>
<td>Item Refinement</td>
<td>Scale Purification</td>
</tr>
<tr>
<td>-------</td>
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<tr>
<td>Source/Method</td>
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<td>Pilot testing (n=120)</td>
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<td></td>
<td>Expert Interviews</td>
<td>Final Judging by Scale Developers</td>
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</tr>
<tr>
<td></td>
<td>Coding by Scale Developers</td>
<td></td>
<td></td>
</tr>
<tr>
<td># of Items</td>
<td>27</td>
<td>24</td>
<td>9</td>
</tr>
<tr>
<td>17</td>
<td>In our team we always try to put ourselves in the shoes of our fellow team members.</td>
<td>In our team we always try to put ourselves in the position of our fellow team members.*</td>
<td>low loadings and/or high cross-loadings</td>
</tr>
<tr>
<td>18</td>
<td>As a team we constantly strive to consider issues from all possible angles.</td>
<td>As a team we constantly strive to consider issues from all possible angles.</td>
<td>high cross-loading, low loading on first factor</td>
</tr>
<tr>
<td>19</td>
<td>There is no room for “I know it all” experts who cannot think across boundaries in our team.</td>
<td>In our team there is no room for “I know it all” experts who cannot think across boundaries.*</td>
<td>low loadings and/or high cross-loadings</td>
</tr>
<tr>
<td>20</td>
<td>In our team everyone’s voice has the same weight.</td>
<td>In our team everyone’s voice has the same weight.*</td>
<td>low loadings and/or high cross-loadings</td>
</tr>
<tr>
<td>21</td>
<td>Within our team we do not perceive any hierarchical differences.</td>
<td>arbitrary: there will always be a formal leader</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>In our team we take everyone’s contributions seriously.</td>
<td>In our team we take everyone’s contributions seriously.</td>
<td>In our team we take everyone’s contributions seriously.</td>
</tr>
<tr>
<td>23</td>
<td>Within our team we are willing to take risks.</td>
<td>Within our team we are encouraged to try new ways of doing things.*</td>
<td>Within our team we are encouraged to try new ways of doing things.</td>
</tr>
<tr>
<td>24</td>
<td>In our team we have a common ground of understanding to work from.</td>
<td>In our team we have a shared vision guiding our work.*</td>
<td>low loadings and/or high cross-loadings</td>
</tr>
<tr>
<td>25</td>
<td>Within our team we make sure that discussions are connected to our specific task.</td>
<td>more related to measuring creative performance</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>In our team we set the rules of engagement for ourselves.</td>
<td>too general, not specific to creativity</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>As a team we are more proactive rather than reactive, i.e. there is no need to push people.</td>
<td>too general, not specific to creativity</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>In our team we are able to deal with unanticipated events on the spot.**</td>
<td>low loadings and/or high cross-loadings</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>In our team we think on their feet.**</td>
<td>low loadings and/or high cross-loadings</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>In our team we are capable of identifying opportunities for new work processes.**</td>
<td>low loadings and/or high cross-loadings</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>In our team we consider short-term errors and failures a source of learning.**</td>
<td>low loadings and/or high cross-loadings</td>
<td></td>
</tr>
</tbody>
</table>

* item was modified following suggestions from the judges  
** item was added following suggestions from the judges
Confronted with challenges brought about by global economic shifts and sustainability pressures, CEOs increasingly invite CPOs to take the wheel and steer through or around supply market volatility, supply chain disruption, and rising costs of raw materials (Accenture 2011). Times could not be better for procurement to prove its worth to the business. But are CPOs and their procurement organizations really doing enough to help their organizations deal with all of this?

Certainly, since its establishment as a profession in the early twentieth century, procurement has undergone a metamorphosis from a shunned, back-office function to a well-recognized, internally integrated business partner. As such, procurement has continuously been professionalizing its organization and kept introducing procurement tools and processes, all with the aim of creating value and a competitive advantage for the enterprise. Category management, formalization of the sourcing process, spend analysis, adoption of a cost-orientation, supplier relationship programs, and early supplier involvement in innovation are only some examples to illustrate that procurement has been exerting effort to undermine its role as a strategic business partner. Surely, cost reduction and cost avoidance is still the top priority of CPOs (Hackett Group 2016) – but the way savings are generated has transformed. Pressured for continuous bottom-line improvements, buyers must save costs in more compelling, strategic ways including, for instance, working capital expenditure improvements, payment term renegotiations, and reverse-engineering of cost structures (Forbes 2015). Today, procurement professionals collaborate with internal stakeholders as part of sourcing teams to develop disruptive sourcing strategies required to sustain (end even increase) bottom-line results. More recently, procurement is also being held accountable for driving top-line results through proactive fueling of innovation. Procurement professionals work together with key suppliers as part of co-innovation teams to collectively generate and select ideas for successful commercialization. This brief snapshot of procurement’s role as an increasingly strategic corporate discipline suggests that CPOs and their staff are considerably contributing to companies’ competitive advantage in turbulent economic times.

And yet, many procurement organizations struggle to live up to stakeholders’ heightened expectations accompanying the strategic uplift. While teams – composed of
internal only or also external stakeholders – are the most appropriate form to tackle problems that are sourcing-related but carry business-wide (or even supply chain-wide) implications, success is not guaranteed. Many teams fail or fall short of expectations. According to a recent survey by Deloitte (2016), 62 per cent of CPOs do not believe that their sourcing teams have the skills and capabilities to deliver their procurement strategy and expected outcomes. In addition, fewer organizations benefit from supplier innovation input: 42 per cent in 2011 compared to 35 per cent in 2012 (State of Flux 2012). Even though tapping supplier innovation is a designated procurement objective for 55 per cent of global CPOs (Hackett Group 2016), most procurement organizations still lack the necessary capabilities. In search of an explanation for these deficiencies, recent popular business press and pioneering scholars point to creativity as the key in procurement – or rather the lack thereof. Creativity is commonly defined as the development of novel and useful ideas or solutions that are ready to be put into practice (Amabile 1996). Contrary to common perception people might have of creativity, it is not the ability to create ideas out of nothing (Amabile 1998). Instead, creativity requires the meaningful, novel recombination and application of existing, relevant knowledge to capitalize on an opportunity or solve an underlying problem (Ritter, van Baaren, and Dijksterhuis 2012). As individuals are usually not in possession of all relevant knowledge, creative problem-solving and solution-finding often involves the collaboration of individuals within collectives such as workgroups, taskforces or (cross-functional and cross-enterprise) teams (Perry-Smith 2006). With most procurement-related work carried out by teams, the ability to think out of the box together with other relevant stakeholders – to be collectively creative – is essential for next generation procurement professionals (Busch 2013; Giunipero et al. 2005; Teague 2014).

According to the description of creativity above, the development of disruptive, effective sourcing strategies and the generation of innovative ideas for commercialization together with suppliers are hence nothing else but acts of creativity. However, the coordination of creative acts in collectives such as work groups and teams is inherently difficult. Unforeseeable group dynamics, apparent conflicts of interest, different viewpoints, and (too much) heterogeneity in skills all provide potential barriers to effective, creative team functioning. Chances are high that such difficulties will hamper collective creativity in sourcing teams and co-innovation teams. In such a situation, the challenge of team members lies in – together with stakeholders from within or outside the organization – developing a shared understanding for creative teamwork without losing sight of set targets. Here, the team’s interaction process (i.e., the process by which team inputs are transformed into outcomes) is instrumental in helping group members learn how to effectively deal with issues of individual differences within the group, and to create a climate that supports and facilitates learning and sharing of ideas. Recognizing the need for a perspective on collective creativity in procurement, this research set out to better understand how relevant creative behaviour originates bottom-up within teams. In a set of empirical studies involving expert interviews, focus groups, and data
collection in sourcing and co-innovation teams, this dissertation investigates the nature of collective creativity and its impact on bottom- as well as top-line results. Drawing on organizational behaviour literature, the author developed a measurement scale to capture team creativity climate, defined as team members’ shared perceptions of their joint policies, procedures, practices with respect to finding creative solutions. Results show that when the team climate is conducive of collective creativity, sourcing team performance is enhanced and sales turnover resulting from the commercialization of a jointly generated and selected idea is higher. The main findings of this dissertation are summarized as guidelines for fostering and benefitting from team creativity climates:

How to build creative team climates in sourcing teams?
- staff teams cross-functionally (i.e., sales & marketing, purchasing, R&D, finance)
- make sure that team members are experts in their own fields
- install leaders able to be considerate of members and trigger their participation
- train leaders to be passive/active when the team has more/less creative capabilities

What are the benefits of creative team climates in sourcing teams?
- team members rely less on formal templates and standard sourcing processes
- team members consider new solution paths outside their field of expertise
- team members assume a holistic view of an underlying task or problem
- team members better assess and weigh involved risk, cost, and value for their firm
- proposed solutions tend to be creative (i.e., novel, relevant, feasible, and specific)
- creative solutions can lead to cost reductions, cost avoidance, and working capital improvements and allow quicker implementation

What to watch out for when co-innovating with suppliers in joint innovation teams?
- pay attention to both, partnership (macro-manage!) and team (micro-manage!)
- do not overly rely on contracts and IP agreements – they might hamper creativity
- avoid overly strict contracts and IP agreements – build in some deliberate slack
- invest in a good relationship with your partner – this might improve quality of ideas
- when selecting innovation partners, pick suppliers to which you have good relations

What are the benefits of creative team climates in co-innovation teams?
- buyers and suppliers develop shared perceptions of how to do things as a team
- buyers and suppliers think of each other less as individuals from separate entities
- shared perceptions forge bonding and collaboration among team members
- team members are better able to generate and select ‘creative ideas that sell’
- commercializing creative ideas can increase buyer’s sales turnover at the market and supplier’s business turnover with the buyer
Summary

The world’s leading global companies excel because of world-class procurement organizations. Procurement contributes to the bottom- and top-line by operating at nearly 20 per cent lower costs and by securing profit margins up to 22 per cent higher than the average. Chief Procurement Officers (CPOs) and their procurement staff have earned a reputation as creators of competitive advantage and enterprise value. In times of increasing competition, environmental pressures, and complex sourcing environments, however, many procurement initiatives struggle to create such value. The present dissertation addresses this deficiency by taking a collective creativity perspective on value creation in procurement. This dissertation investigates whether team climates conducive of creativity facilitates the performance of sourcing teams and co-innovation teams, that business leaders increasingly employ to pool relevant knowledge and expertise where needed.

In Chapter 2, the authors elaborate on the relevance of creativity for value creating procurement and provide the theoretical foundation for the central construct of this dissertation, Team Creativity Climate (TCC). Following systematic scale development procedures involving a literature search, several practitioner interviews and empirical testing with a sample of 120 procurement professionals, the construct is conceptualized and a 9-item measurement scale developed. A first contribution lies in the proper conceptualization and measurement of TCC for advancing the behavioural research stream within procurement from only anecdotes to testable theory. A second contribution lies in embedding the TCC construct into extant literature on procurement in general and sourcing teams in specific. The ultimate objective of Chapter 2 is to systematically build a case for creativity in procurement, thereby filling the void in research on collective, creative problem-solving in procurement.

In Chapter 3, TCC is applied in an internal sourcing team context. Here, the challenge lies in the blending of diverse knowledge bases in novel ways to reduce costs instead of price. Procurement professionals can no longer rely on standard sourcing processes, standard operating procedures, and traditional price negotiations. Instead, delivering cost reductions and avoidance requires a collective, creative problem-solving approach. Together with internal stakeholders buyers can create bottom-line impact in more stra-
tectic, value-adding ways by, for instance, redefining the purchasing specifications or even internal customer needs, renegotiating payment terms and conditions, creating synergies across business units, and improving working capital expenditure. Accounting for the creative process underlying the development of such solutions, TCC is integrated into a conceptual framework mediating between member capabilities and key performance outcomes including working capital improvements, cost avoidance and cost reduction. Team leader behaviour and team diversity are introduced as contextual moderators. Data collected from 52 sourcing teams is used to test whether TCC is a key driver of sourcing performance.

In Chapter 4, TCC is applied to co-innovation teams in which buyers collaborate with suppliers to generate and select creative ideas for implementation. Growing revenue and thereby generating top-line value through supplier innovation is considered a supreme discipline of value creating procurement, even by highly mature procurement organizations. In the past, however, companies have struggled to successfully leverage innovation relationships with suppliers for generating sales growth. Extant research provides no explanation for this; some studies report a positive, some a negative and some no association between supplier involvement and innovation performance. Just as is the case in sourcing teams, creative ideas originate from close interaction between individuals. Suspecting that this is even more difficult in mixed co-innovation teams, TCC is introduced as main driver of creative performance. Dyadic data collected from 47 co-innovation teams is used to test whether buyer’s and supplier’s sales turnover is greater when teams generate and select ideas for implementation in the market and the moderating impact of contracts and commitment.
Curriculum Vitae

Nadine Kiratli was born in Aachen, Germany, on 9th October 1986. From 1997 to 2006, she attended secondary school at the Städtisches Gymnasium St. Leonhard in Aachen (Germany) and spent an exchange year in the US. In 2009, Nadine completed her undergraduate studies (B.Sc., Top 10% graduate) in International Business at Maastricht University (The Netherlands) and Boğaziçi University in Istanbul (Turkey). Afterwards, Nadine continued her education at Maastricht University and obtained her Master Degree in Strategic Marketing (M.Sc., cum laude) in 2011.

Upon graduation Nadine began a Ph.D. program at Maastricht University’s Department of Marketing and Supply Chain Management. Funded by NEVI, the Dutch Association for Purchasing Management, her research focused on procurement as a value creating function. Under the supervision of Prof. dr. Ko de Ruyter, Prof. dr. Frank Rozemeijer, and Prof. dr. Ad de Jong, Nadine investigated how creative team climates can facilitate value creation in sourcing and co-innovation teams. Within this research, Nadine has worked together and advised numerous global companies on their sourcing team and co-innovation processes with suppliers. Nadine has presented her research at national and international conferences and colloquia, including EMAC, WION, and IPSERA. She has won both the IPSERA Best Practitioner Paper award (2012) and the IPSERA Best Paper award (2015).

For outstanding student evaluations, Nadine was nominated for the 2015 Tutor Award of Maastricht University’s School of Business and Economics. Nadine has taught and co-coordinated courses in the Supply Chain Management Master program and supervised Master theses across a wide range of topics in Purchasing and Supply Management. Next to that, Nadine was a competence coach for the PREMIUM honors program, supporting students in their personal and professional development. In September 2016, Nadine will join the Department of Marketing and Supply Chain Management as an Assistant Professor.