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Krister Salamonsen

Exogenous Shocks as Drivers of Growth in Peripheral Regions

- A Multilevel Approach to Regional Development



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Krister Salamonsen

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Krister Salamonsen
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- A Multilevel Approach to Regional Development

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Abstract

This thesis explores the processes of how firms and peripheral regions develop owing to large-scale petroleum projects (hereafter, referred to as exogenous shocks). The application of well-developed theoretical frameworks does not fully account for the idiosyncratic nature of regions, nor does the traditional scholarly approach sufficiently explore the mechanisms that affect the path trajectories of regions. Therefore, this thesis aims to provide insights and extend theory about the complex and multifaceted nature of regional development in the context of the oil and gas industry. A multilevel analysis, with firms, institutions, and public actors at the micro level and systemic structures (e.g., clusters and regional innovation systems (RISs)) at the macro level, is applied to address the overall research question of the thesis: *How can an exogenous shock stimulate development processes at the micro and macro levels in peripheral regions, and what are the mechanisms that facilitate this development?*

To provide insights about the mechanisms and interconnections that exist in and between the micro and macro levels in regional development processes, this thesis builds on three separate research questions that I address through qualitative case studies in four empirical papers to answer the overall research question.

The first two papers explore the macro level and thereby address the first research question of the thesis: (1) *What are the exogenous shock mechanisms that stimulate the emergence of clusters and RISs, and how does the emergence of clusters and RISs affect the development of peripheral regions?* Paper 1 draws on theoretical insights from the RIS literature to investigate how an exogenous shock mitigated three innovation barriers, i.e., organisational thinness, fragmentation, and lock-in, in a peripheral region. The empirical findings illustrate that the exogenous shock led to

the establishment of several external firms and institutions in the region and that the mitigation of the innovation barriers facilitated path creation processes among regional firms owing to their increased access to knowledge, resources, and firm networks. As these processes developed over time, an emerging RIS was observed. Paper 2 then draws on theoretical insights from the strategic alliance and cluster literature to study how two different regions were affected by two different exogenous shocks. The empirical findings illustrate that in one of the cases, the exogenous shock stimulated the establishment of strategic alliances between small regional firms and between small regional firms and large national/international firms. Furthermore, these firm-level developments increased the industrial sectorialisation (i.e., increased the number of firms operating in the oil and gas supply industry) in the region. Over time, as the number of oil and gas-related suppliers, and the interrelations between them, increased, an emerging cluster structure was observed. Papers 1 and 2 contribute to the thesis by illustrating how large-scale petroleum projects (i.e., exogenous shocks) can trigger RIS and cluster formation in peripheral regions owing to project developers' authority over the central stakeholders. These findings advance theory, first, by moving away from the traditional view that RISs and clusters exist only in the most successful regions and, second, by providing insights into the mechanisms that underlie the formation of such systemic structures.

Paper 3 draws on the proximity framework to address the second research question of the thesis: (2) *What are the mechanisms that affect interfirm collaboration between small peripheral firms and their larger partner?* The paper investigates five asymmetrically sized strategic alliances and analyses them in terms of organisational, technological, and geographical proximity between the small and large firms in the alliance. The findings illustrate that nonspatial (organisational and technological)

dimensions of proximity can mitigate the 'smallness challenge' in asymmetrical alliances and compensate for a lack of geographical proximity. The paper contributes to the thesis by illustrating how peripherally located firms can develop through large-partner alliances if they manage to develop proximity to their large partner.

Paper 4 draws on theoretical insights from the resource-based view and the growth and strategic alliance literature to address the third research question of the thesis: *(3) What are the mechanisms that facilitate firm development in peripheral regions?* The paper illustrates the multifaceted process of how an entrepreneurial firm managed to enter into a large-partner alliance in order to achieve growth in new markets. Notably, the paper illustrates that firms must be able to develop their internal resources and network relations to position themselves in relation to potential alliance partners. Furthermore, the paper shows that strategic alliances represent a novel strategy for accessing external resources and illustrates that a firm's ability to orchestrate the acquired resources represents a key tenet for achieving growth. The paper contributes to the thesis by illustrating the complex processes surrounding resource acquisition and alliance formation and by demonstrating that small entrepreneurial firms can achieve growth through alliances if they are able to manage the alliance relationship.

Based on the theoretical discussions and the findings from the individual empirical papers, the thesis proposes a multilevel conceptual model that captures the regional development process. The conceptual model comprises three main stages involving mechanisms at the firm (1) and interfirm (2 and 3) levels and proposes that these stages represent three strategic actions in the firm-level development process: positioning (Stage 1), mobilisation (Stage 2), and operationalisation (Stage 3). Finally, the model proposes that the accumulated effects of these firm-level mechanisms may

represent the means for the development of clusters and RISs in peripheral regions. The overall objective of the conceptual model is thus to illustrate the different firm-level processes that occur when firms exploit new business opportunities, the interconnections between these processes, and finally the effect of these processes on regional development.

Table of contents

ACKNOWLEDGEMENTS	I
ABSTRACT	III
TABLE OF CONTENTS.....	VII
LIST OF TABLES	IX
LIST OF FIGURES.....	IX
1. INTRODUCTION.....	1
1.1 RESEARCH TOPIC AND APPROACH.....	1
1.2 RESEARCH QUESTIONS	3
1.2.1 The role of regional innovation systems and clusters in facilitating regional development	4
1.2.2 The dynamics and gains from interfirm collaboration	5
1.2.3 The mechanisms underlying firm development in peripheral regions	6
1.3 OUTLINE OF THE THESIS	8
2. THEORETICAL FRAME OF REFERENCE AND RESEARCH GAPS	8
2.1 REGIONAL INNOVATION SYSTEMS AND CLUSTERS.....	10
2.1.1 Regional innovation systems	11
2.1.2 Industry clusters	14
2.1.3 The similarities and distinctions between regional innovation systems and clusters	17
2.2 STRATEGIC ALLIANCES AND THEIR DYNAMICS	18
2.3 RESOURCE MOBILISATION AND UTILISATION AND THE ROLE OF FIRM NETWORKS.....	24
2.4 CURRENT KNOWLEDGE GAPS.....	28
2.5 THEORETICAL FRAMEWORK	31
3. METHODOLOGY	34
3.1 POSITIONING IN THE PHILOSOPHY OF SCIENCES	34
3.2 RESEARCH CONTEXT	38
3.3 CASE STUDY DESIGN	41
3.3.1 Case sampling and data collection	46
3.3.2 Data analysis	50
3.3.3 Quality measures of qualitative case studies	52
3.4 ETHICAL CONSIDERATIONS.....	55
4. EMPIRICAL STUDIES	56
4.1 OVERVIEW	56
4.2 PAPER 1: THE EFFECTS OF EXOGENOUS SHOCKS ON THE DEVELOPMENT OF REGIONAL INNOVATION SYSTEMS	58
4.2.1 Introduction and research question	58
4.2.2 Theoretical framework	58
4.2.3 Methodological approach	59
4.2.4 Findings	60
4.2.5 Contribution to the thesis	60
4.3 PAPER 2: SMALL BUSINESSES NEED STRONG MEDIATORS - MITIGATING THE DISADVANTAGES OF PERIPHERAL LOCALISATION THROUGH ALLIANCE FORMATION	61
4.3.1 Introduction and research question	61
4.3.2 Theoretical framework	61

4.3.3 Methodological approach	62
4.3.4 Findings	62
4.3.5 Contribution to the thesis	63
4.4 PAPER 3: OVERCOMING THE 'SMALLNESS CHALLENGE' IN ASYMMETRICAL ALLIANCES	64
4.4.1 Introduction and research question	64
4.4.2 Theoretical framework	64
4.4.3 Methodological approach	65
4.4.4 Findings	66
4.4.5 Contribution to the thesis	67
4.5 PAPER 4: THE PAIN AND GAIN OF ORCHESTRATING GROWTH THROUGH STRATEGIC ALLIANCES	67
4.5.1 Introduction and research question	67
4.5.2 Theoretical framework	68
4.5.3 Methodological approach	69
4.5.4 Findings	69
4.5.5 Contribution to the thesis	70
5. CONCLUSIONS AND IMPLICATIONS	71
5.1 FINDINGS AND THEORETICAL DEVELOPMENT	71
5.1.1 Positioning towards new market opportunities	72
5.1.2 Mobilisation of strengthened embeddedness and resource bases	75
5.1.3 Operationalising the alliance relationship	77
5.1.4 The emergence of clusters and RISs	79
5.2 THEORETICAL CONTRIBUTIONS	83
5.2.1 The cluster and RIS literature	84
5.2.2 The strategic alliance literature	85
5.2.3 The resource-based view	86
5.3 IMPLICATIONS FOR PRACTICE	87
5.3.1 Implications for firm managers and entrepreneurs	87
5.3.2 Policymakers	89
5.3.3 Large firms that enter peripheral regions	90
5.4 LIMITATIONS	92
5.5 SUGGESTIONS FOR FURTHER RESEARCH	93
6. INDIVIDUAL EMPIRICAL PAPERS	96
6.1 THE EFFECTS OF EXOGENOUS SHOCKS ON THE DEVELOPMENT OF REGIONAL INNOVATION SYSTEMS	96
6.2 SMALL BUSINESSES NEED STRONG MEDIATORS: MITIGATING THE DISADVANTAGES OF PERIPHERAL LOCALISATION THROUGH ALLIANCE FORMATION	135
6.3 OVERCOMING THE 'SMALLNESS CHALLENGE' IN ASYMMETRICAL ALLIANCES	164
6.4 THE PAIN AND GAIN FROM ORCHESTRATING GROWTH THROUGH A STRATEGIC ALLIANCE	193
7. REFERENCES	217

List of tables

<i>Table 1: Main theoretical approaches used to explore the regional development process.....</i>	<i>9</i>
<i>Table 2: Research paradigms and their characteristics.....</i>	<i>35</i>
<i>Table 3: Demographic data on the geographical research context.....</i>	<i>41</i>
<i>Table 4: Case study characteristics.....</i>	<i>43</i>
<i>Table 5: Main activities in the research process.....</i>	<i>45</i>
<i>Table 6: Overview of interviews conducted in 2008-2014.....</i>	<i>48</i>
<i>Table 7: Overview of the individual empirical papers.....</i>	<i>57</i>

List of figures

<i>Figure 1: Multilevel analysis and main theoretical concepts.....</i>	<i>3</i>
<i>Figure 2: Theoretical framework.....</i>	<i>33</i>
<i>Figure 3: The geographical context of the research.....</i>	<i>39</i>
<i>Figure 4: Stage 1 of the multilevel conceptual model.....</i>	<i>73</i>
<i>Figure 5: Stage 2 of the multilevel conceptual model.....</i>	<i>75</i>
<i>Figure 6: Stage 3 of the multilevel conceptual model.....</i>	<i>78</i>
<i>Figure 7: A multilevel conceptual model of the regional development process.....</i>	<i>80</i>

1. Introduction

1.1 Research topic and approach

This thesis aims to explore the processes through which firms and peripheral regions develop owing to exogenous shocks. Specifically, I examine large-scale petroleum projects as a source of exogenous shocks because of their potential ability to facilitate development in peripheral regions. The oil and gas industry is comprehensive, and it has made a profound impact on many nations possessing rich petroleum resources. In addition, the industry has fostered a vast array of related industries. For example, central oil and gas clusters have emerged around the world, in areas such as Houston (Feagin, 1998), Aberdeen (Mackinnon et al., 2004), and Stavanger (Hatakenaka et al., 2006).

Peripheral regions are often characterised by negative stereotypes such as a high distance from central regions and decision makers (Anderson, 2000), a low level of R&D and innovation, a lack of extraregional linkages, and a lack of knowledge providers and support institutions (Tödting and Trippel, 2005). Moreover, peripheral regions are often recognised as having systemic liabilities such as fragmented and thin institutional structures that limit development (Isaksen, 2001). This thesis illustrates that exogenous shocks represent a powerful or perhaps necessary means through which peripheral regions can overcome such liabilities. While well-known clusters and success regions are extensively studied and consequently are well understood, scholars have called for further studies focusing on contexts that differ from, e.g., Silicon Valley (e.g. Benneworth, 2004; Doloreux and Dionne, 2008). Therefore, this thesis aims to further knowledge on the role of different mechanisms triggered by exogenous shocks in the development of peripheral regions.

Existing research has not sufficiently elucidated the interconnections that exist between the micro and macro-regional levels (Forbes and Kirsch, 2011). To fill this gap, this thesis employs a longitudinal multilevel approach to shed light on different levels of analysis—from firms, institutions, and public bodies at the micro level to emerging clusters, innovation systems, and other region-specific factors at the macro level. Further, this thesis was developed in parallel with the real-life development of the study region, thereby reducing potential issues of retrospective informant biases. The thesis aims to provide insights into the complexity and interconnectedness that exist between the different layers of actors that exist in a region and specifically into the effect of an exogenous shock caused by oil and gas development on these processes. To achieve this objective, I rely on a multilevel approach that includes firms, public bodies, and other actors at the *micro* level and regions and the systemic structures of clusters and regional innovation systems (RISs) at the *macro* level. Consequently, the overall research question is as follows: *How can an exogenous shock stimulate development processes at the micro and macro levels in peripheral regions, and what are the mechanisms that facilitate this development?*

To address the overall research question, I developed four individual papers that explore different but related mechanisms at the micro and macro levels. The papers use different theoretical and contextual approaches that collectively substantiate the underlying mechanisms that characterise the development of peripheral regions (Figure 1). Because the theoretical approaches have been used almost exclusively in central and successful regions in prior studies, the thesis makes several empirical and conceptual contributions from a context that has received limited scholarly attention. The individual papers build upon interview data collected in the period between 2008 and 2014, and for this purpose, 46 interviews with firm representatives, public officials, and sector experts were conducted. Based on theoretical insights and

empirical findings from the individual papers, the main contribution of the thesis is the development of a multilevel conceptual model that captures the key mechanisms triggered by exogenous shocks that stimulate the development of peripheral regions.

1.2 Research questions

Three research questions address the overall research question of the thesis, and these questions are explored in turn in each of the individual empirical papers. The first question addresses how firm-level development may stimulate the emergence of clusters and RISs, providing insights into development at the macro level. The second question addresses the role of, and dynamics within, interorganisational collaboration as a stimulus for firm development. The third question focuses on the micro level by investigating the multifaceted processes that facilitate development at the individual firm level. Figure 1 illustrates the interconnection between the research questions and the main theoretical concepts that are used to obtain a holistic understanding of the mechanisms that underlie regional development at different levels of analysis.

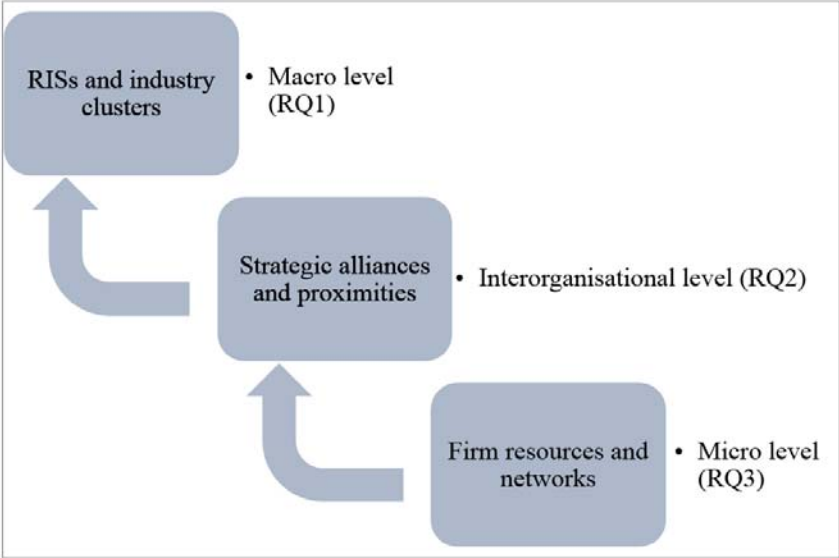


Figure 1: Multilevel analysis and main theoretical concepts

1.2.1 The role of regional innovation systems and clusters in facilitating regional development

A number of studies have illustrated different ways in which regions have experienced growth and development. Some have studied the emergence and associated benefits of industrial clusters (Porter, 2003; Brenner, 2005; Ellison et al., 2010; Martin and Sunley, 2011; Lechner and Leyronas, 2012; Henn, 2013), whereas others have focused on the role of RISs (Cooke et al., 1997; Braczyk et al., 1998; Asheim and Isaksen, 2002; Doloreux, 2002; Tödtling and Trippel, 2005). The majority of these studies have illustrated the importance of, e.g., collaboration between firms and research institutions, innovative entrepreneurs, and well-functioning policy measures. Nevertheless, a number of unanswered questions about clusters and RIS dynamics in peripheral regions remain. Under what conditions do clusters and RISs emerge in peripheral regions? Do peripherally located clusters and RISs differ from the well-known Silicon Valley (high-tech) and Baden-Württemberg (automotive and ICTs) clusters in terms of composition and complexity? To highlight this gap in the literature, some studies have even raised the question whether clusters and RISs can exist in peripheral regions (Doloreux and Dionne, 2008).

As this thesis seeks to also explore the factors that underlie development at the macro level, the first research question is as follows: *What are the exogenous shock mechanisms that stimulate the emergence of clusters and RISs, and how does the emergence of clusters and RISs affect the development of peripheral regions?* This question indeed addresses the issue of why some regions manage to renew and develop, while others do not (Martin and Sunley, 2006).

Papers 1 and 2 focus on different topics that help address the first research question. Paper 1 illustrates how an exogenous shock transformed a peripheral region from a state of path dependency and decline into an emerging RIS. The central findings

include, first, that large external firms are powerful change agents because of their ability to stimulate path creation processes by reducing or even dissolving regional actors' lock-in and, second, that successful path creation processes in peripheral regions depend on the collective mobilisation of all actors in the region's institutional structure. Paper 2 illustrates how two peripheral regions developed along two different paths, resulting from the activities that followed the establishment of two oil companies in these regions. In one region, the oil company facilitated extensive firm-level development that resulted in an emerging cluster structure, whereas in the other region, the oil company failed to stimulate growth patterns at the firm and region level. The central findings include the ability of large actors to large external firms to a region and to bridge the gap between these firms and inexperienced local firms. As a result, local firms gain access to knowledge and learning that, over time and in combination with the establishment of additional firms in the region, provide grounds for emerging cluster structures.

1.2.2 The dynamics and gains from interfirm collaboration

While interfirm collaboration can facilitate the acquisition of, e.g., knowledge, resources, and network relations, studies have illustrated that complexities may arise when firms collaborate. For example, recent studies have illustrated that strategic alliances suffer from failure¹ rates ranging between 50% and 70% (Hughes and Weiss, 2007; Chao, 2011). Furthermore, when alliance partners differ in terms of their size or level of experience from previous alliances, collaboration may also suffer owing to larger partners' opportunistic behaviour (Ahuja et al., 2009; Yang et al., 2014).

For small firms in peripheral regions, the potential gains from large-partner collaboration are considerable (e.g., access to knowledge, resources, and markets).

¹ Here, failure refers to termination or the failure of the alliance to deliver value to the partners (Chao, 2011)

Simultaneously, however, a number of potential challenges may arise. A lack of experience from earlier collaborations and a lack of industry-specific knowledge are examples of small-firm liabilities that may induce a larger and more experienced partner to engage in opportunistic behaviour.

Using the proximity framework to explore the factors that influence interfirm collaboration, previous scholars have shown that partners with high proximity are better able to interact and exchange knowledge (Gertler, 1995; Knoblen and Oerlemans, 2006), increasing their propensity to develop and innovate (Noteboom et al., 2007; Broekel and Boschma, 2012). The second objective of the thesis is to investigate small firms' challenges and opportunities in large-partner alliances; thus, the second research question is as follows: *What are the mechanisms that affect interfirm collaboration between small peripheral firms and their larger partner?*

Paper 3 focuses on the role of small firms' possession and development of geographical, organisational, and technological proximity in five size-asymmetrical alliances. First, the findings illustrate that nonspatial proximity matters more for small firms than for other firms in their ability to overcome large-partner opportunistic behaviour. Second, the findings indicate that proximities have varying roles, depending on where small firms are situated in the alliance lifecycle. The paper enhances current knowledge about the processes and challenges that underlie collaboration between small peripheral firms and large partners.

1.2.3 The mechanisms underlying firm development in peripheral regions

Previous research has shown that firms depend on a variety of inputs to develop and reach their strategic goals. For example, a number of studies have focused on resources as a means for firms to develop and attain a competitive advantage (Barney, 1991; Teng, 2007; Sirmon et al., 2011). Furthermore, several scholars have explored

the link between resources and different types of interfirm collaboration in relation to firm development through, e.g., resource acquisition and access to new markets (Harrison et al., 2001; Van-Gils and Swart, 2009; Wiklund and Shepherd, 2009; Yang et al., 2014). Despite the excellence and variety of these studies, only a few have explored the mechanisms that underlie firm development outside the well-known clusters and dynamic cities of the world.

Peripheral regions are often dominated by firms that tend to suffer from liabilities additional to small size and localisation (Cooke, 1996) such as a scarce resource base (Benneworth, 2004; Melancon and Doloreux, 2013), a lack of external knowledge pipelines, and weakly developed innovative capabilities (Henn, 2013). To overcome such liabilities, small firms must be able to establish, manage, and benefit from interfirm collaboration (Van-Gils and Swart, 2009). To address these issues, the third research question is posed as follows: *What are the mechanisms that facilitate firm development in peripheral regions?*

Paper 4 provides a longitudinal single-case study that explores a small firm's journey into an alliance with a large multinational corporation. The paper provides rich descriptions of this multifaceted process, including pre-entry positioning strategies, the establishment of the alliance, initial issues related to smallness, legitimacy and resource gains, and growth through firm acquisitions and market expansion. The findings illustrate, in detail, the complex resource acquisition and mobilisation processes that growth-oriented entrepreneurial firms confront, indicating the importance of external tie-formation and internal resource development during the pre-entry stage. In general, the paper provides novel insights into the issues of size asymmetry in alliance formation processes.

1.3 Outline of the thesis

In Chapter 1, I have positioned the thesis in terms of context and research areas and presented the research questions that guide the thesis. In Chapter 2, I present the theoretical state of the art in three subsections addressing 1) the RIS and cluster concepts, 2) the strategic alliance literature, and 3) the literature on firm resources and firm networks. I then highlight the current knowledge gaps identified in the literature review. I close Chapter 2 by presenting a theoretical framework that aims to bridge the selected theoretical concepts and, more important, to facilitate the emergence of new insights into holistic approaches to regional development studies.

In Chapter 3, I present and discuss the methodological choices that have shaped the development and content of the thesis. I begin by presenting my position in the philosophy of sciences, providing a rationale for the underlying logic of my reasoning. Next, I provide a detailed description of the case study as my chosen research design, including the case sampling and data collection procedures, the data analysis process, and my efforts to comply with the quality measures of qualitative research. Chapter 3 closes with a discussion about the ethical aspects of developing this thesis. In Chapter 4, I provide a brief overview of the four individual empirical studies, including their contributions to the thesis. Chapter 5 then presents the key findings of the thesis related to the research questions stated in Chapter 1. Furthermore, I present and discuss the theoretical and practical implications as well as the limitations of the thesis. Chapter 5 closes with suggestions for further research. Finally, in Chapter 6, I include the four empirical papers.

2. Theoretical frame of reference and research gaps

This chapter presents the theoretical concepts that are used in this thesis to explore development processes at the firm and regional levels. Prior to this presentation and

discussion, Table 1 provides an overview of the core elements that characterise the theoretical approaches. Section 2.1 provides an overview of the larger systemic structures, namely, clusters and RISs. Section 2.2 presents the role of strategic alliances and the dynamics within these interfirm relationships, and Section 2.3 focuses on the processes through which firms acquire and develop resources and the role of network relations in these resource mobilisation processes. Section 2.4 presents the knowledge gaps identified in the current literature and proposes a theoretical framework that synthesises and illustrates the interconnections in the theoretical framing (Section 2.5).

Table 1: Main theoretical approaches used to explore the regional development process

	<i>Definition</i>	<i>Key tenets</i>	<i>Knowledge gaps</i>	<i>Key articles</i>
<i>Regional Innovation Systems</i>	'[systems] in which firms and other organisations are systematically engaged in interactive learning through an institutional milieu characterised by embeddedness' (Cooke et al., 1998, p. 1581)	Interfirm innovation collaboration Institutional ('support') infrastructure Spatial proximity	Peripheral regions (context) Emergence and development (evolution)	Asheim and Isaksen (1997; 2002), Asheim and Coenen (2005) Cooke (et al. 1997; 2001), Braczyk et al. (1998), Doloreux and Parto (2005), Tödtling and Tripll (2005)
<i>Clusters</i>	'Geographic concentrations of interconnected companies [...] that compete but also co-operate' (Porter, 1998b, p. 197)	Production systems Competitive advantage Flow of goods, personnel, information and resources Spatial proximity	Peripheral regions (context) Emergence and development (evolution)	Porter (1990; Porter, 1998a; 2000), Baptista and Swann (1998), Bathelt et al. (2004), Maskell (2001), Tallman et al. (2004), Menzel and Fornahl (2010)
<i>Strategic alliances</i>	'[...] deliberate relations between otherwise autonomous organizations for the joint accomplishment of individual operating goals' (Schermerhorn, 1975, 847)	Growth strategy Resource acquisition and orchestration Learning	Size-asymmetrical alliance relationships Emergence and development (evolution)	Harrigan (1988), Kogut (1988), Gulati (1995b; 1998), Eisenhardt (1996), Das and Teng (1998; 2000), Elmuti and Kathawala (2001), Kale and Singh (2009)
<i>Firm resources</i>	'[those] tangible and intangible assets firms use to conceive of and implement their strategies' (Barney and Arkan, 2001, p. 138)	Firm performance Value, rareness, inimitability, orchestration	How resource dynamics change over time (acquisition and development, orchestration)	Penrose (1959), Wernerfelt (1984), Dierickx and Cool (1989), Barney (1991; 2001), Alvarez and Busenitz (2001), Ireland et al. (2003), Kraaijenbrink et al. (2010)

2.1 Regional innovation systems and clusters

Porter (2003) notes that a paradox exists within today's economic geography. Although markets and competition face increasing globalisation resulting from, e.g., effective logistics and well developed ICTs, regions and geographic concentrations of businesses and institutions play a prominent role in national economies. A region can be viewed as *'a territory less than its sovereign state, possessing distinctive supralocal administrative, cultural, political, or economic power and cohesiveness, differentiating it from its state and other regions'* (Cooke et al., 1998, p. 1573). Regions thus possess unique sets of traditions, competencies, and institutional structures. Since Alfred Marshall's early thoughts about the role of regions in innovation processes over a century ago (Marshall, 1920 [1890]), the potential strengths and idiosyncratic nature of regions has led to a proliferation of research studies.

The current focus on regions as important sources of innovation and development traces its origins back to the national innovation systems (NIS) approach. The NIS concept, as understood today, was introduced in the 1980s (Lundvall, 1985; Freeman, 1987), and it soon received considerable attention from scholars, particularly during the 1990s (Asheim et al., 2011). The concept can be defined as a system through which private and public firms, universities, and governmental agencies interact while aiming to produce science and technology within national borders (Niosi et al., 1993, p. 212). During the last few decades, the concept has been further developed both in scholarly society and among policymakers. Despite the lasting interest in NIS, scholars have increasingly argued that many of the determinants of economic performance are found at the regional level (e.g. Porter, 2003), an aspect that the NIS approach neglects because of the assumption that countries comprise homogenous bits and pieces (Schrepf et al., 2013).

The increasing focus on regions has led to the emergence of several concepts that describe region-specific phenomena, such as innovative milieu (Camagni and Rabellotti, 1993; Camagni, 1995; Crevoisier, 2004), industrial districts (Markusen, 1996; Brown and Hendry, 1997), clusters (Porter, 1990; 1998a; 2000; Shaver and Flyer, 2000; Tallman et al., 2004; Bell, 2005), and RISs (Cooke et al., 1997; 1998; 2001; Doloreux, 2002; Asheim and Coenen, 2006). What the traditional view recognises about these phenomena is that they often characterise the leading industries or industrial regions of nations. Research on these phenomena has provided valuable implications for theory development and policy making (Asheim et al., 2011). This thesis adopts the RIS and industry cluster perspectives as lenses through which to study development at the firm and regional levels, and the reason for this choice rests on three arguments. First, according to recent publications, the cluster and RIS literature presents the most frequently applied frameworks for studying systemic structures. Thus, scholarly society recognises further studies in the field. Second, the combination of the cluster and RIS concepts may represent a concurrent approach for obtaining a holistic understanding about regional development processes. Finally, despite the scholarly maturity of the concepts, several gaps in the current literature exist (to be presented in section 2.4). In the following sections, I first present the RIS and cluster literature before discussing and clarifying the similarities and distinctions between these two concepts.

2.1.1 Regional innovation systems

A RIS can be considered institutional infrastructure facilitating innovation among producers in a region (Asheim and Gertler, 2005) that includes innovation-driven policies and actors such as firms, support agencies, and knowledge infrastructure (Cooke et al., 1998; Doloreux, 2002). Moreover, a RIS can be defined as a system '*[...] in which firms and other organisations are systematically engaged in interactive*

learning through an institutional milieu characterised by embeddedness (Cooke et al., 1998, p. 1581). The RIS framework thus enables detailed exploration of the vast array of actors that exist in a region and, more important, the interconnections that exist between them. Well-functioning RISs are characterised by interactive learning, knowledge production, and social embeddedness among these actors (Doloreux, 2002).

This plethora of characteristics has fostered a number of typologies describing the different shapes and sizes of RISs. Howells (1999), for example, refers to the ‘top-down perspective’ and the ‘bottom-up perspective’, which entail the different degrees of spatial proximity and agglomeration as drivers for economic growth and innovation. Asheim and Isaksen (1997) distinguish between the ‘regionalised national innovation system’, where parts of the system exist in a specific region but still belong to a national innovation system, and the ‘territorially embedded innovation system’, where all parts of the system are embedded in a specific region. Independent of the different typologies, empirical studies have illustrated that the characteristics of RISs are largely based on idiosyncratic conditions; thus, no universal conceptual model exists (Doloreux and Parto, 2005).

Less favourable regions have received scant attention in the existing RIS literature (Doloreux and Dionne, 2008). Indeed, Cooke and Morgan (1998) note that according to a strict reading of the current literature, only three regions deserve the status of RIS: Silicon Valley (high-tech), Emilia-Romagna (automotive and agro-food), and Baden-Württemberg (automotive and ICTs). Because of their rich institutional structures—e.g., leading firms and institutions as well as R&D-intensive actors—these regions are characterised by their ability to develop radical innovations that may even influence global markets. By contrast, weaker regions will often suffer from an

absence of actors with rich resource bases and technological capabilities; thus, their innovation activities tend to be incremental and reactive (Sternberg, 2000; Tödtling and Kaufman, 2001).

Isaksen (2001) provides a typology that has earned increasing attention (e.g. Nauwelaers and Wintjes, 2003; Tödtling and Trippl, 2005), representing a response to the lack of attention towards RISs in weaker regions. The author identifies three different RISs based on their barriers to innovation, namely, organisational thinness (peripheral regions), fragmentation (regional clusters/metropolitan regions), and lock-in (old industrial regions). This typology extends the RIS literature, first, by moving away from the traditional view that RISs exist only in the most successful regions and, second, by providing a framework for studying RISs in less favourable regions. In the wake of these new considerations, some novel studies have used the RIS concept to explore regional economic growth in weaker regions. To employ the concept in peripheral contexts, in this thesis, I use a broad view of the concept, viewing RIS as '*[...] all parts and aspects of the economic structure and the institutional set-up affecting learning as well as searching and exploring*' (Lundvall, 1992, p. 12). Additionally, I view innovation in a broad sense by including incremental changes, such as small changes in products/processes and new organisational tools, not merely radical innovations (Freeman, 1995; Tödtling and Trippl, 2005).

The emergence of a RIS depends on idiosyncratic regional conditions. For example, the ability to innovate differs among regional firms because of their varying degrees of sectorial specialisation (Tödtling, 1992). Furthermore, regional firms differ in their ability to engage in interfirm interaction (Cooke and Morgan, 1998). At the regional level, the capacity to establish relevant institutions, financial resources, and a policy orientation also affects the propensity for a RIS to emerge (Braczyk et al., 1998).

Central to the variety in economic systems is the access to and efficient use of knowledge (Nelson and Winter, 1982). For a RIS to emerge, three dimensions should be fulfilled: 1) actors should be able to absorb new knowledge, technology, and innovation for adaptation to local needs, 2) actors should be able to diffuse innovations to strengthen existing knowledge bases, and 3) actors should generate new knowledge, technology, and innovation (Iammarino, 2005).

2.1.2 Industry clusters

The industry cluster perspective was popularised by Michael Porter through his renowned publication 'The Competitive Advantage of Nations' (Porter, 1990). Since then, the concept has earned considerable attention from scholars in a variety of research fields. Porter defines clusters as *'geographic concentrations of interconnected companies, specialised suppliers, service providers, firms in related industries, and associated institutions (for example, universities, standard agencies, and trade associations) in particular fields that compete but also co-operate'* (Porter, 1998b, p. 197). A different definition further highlights the interconnectedness between the actors that constitute a cluster by defining clusters as *'[...] a group of establishments located within close geographic proximity of one another, which either share a common set of input needs, or rely on each other as supplier or customer'* (Gibbs and Bernat, 1997, p. 19).

Studies have shown that clusters create a competitive advantage both for the collective and for individual firms (Lawson, 1999; Tallman et al., 2004). Additionally, because of both direct cluster effects and network processes, firms in clusters have greater access to information and resources than those situated outside the cluster (Schmitz, 1999; Tallman et al., 2004). Access to knowledge stands out as a central topic in discussions of cluster effects (Basant, 2002). In this regard, Bell (2005)

discusses innovation patterns in clusters and finds that clustered firms have better access to knowledge than do remote firms because information is 'sticky' and location specific. This finding clarifies the central role of proximity in cluster dynamics.

As with regions, clusters are idiosyncratic in terms of their dynamics and performance. Although several studies support the idea that industrial clusters facilitate firms' ability to gain a competitive advantage, being located in a cluster does not guarantee increased overall firm performance. Additionally, the size and role of firms within clusters vary, influencing the way in which a cluster functions (Lechner and Leyronas, 2012). Previous studies have shown that large firm-level performance variations may exist within a cluster and that such variations can be observed as a precondition for cluster development (Lechner and Leyronas, 2012). Moreover, high-performing cluster champions motivate both the formation of new firms and the development of low-performing firms.

While the existing literature has led to a well-developed understanding of how clusters contribute to the economy at regional and national levels, few studies have focused on why and how clusters emerge. Policymakers have long tried to stimulate the emergence of regional clusters by committing funds for cluster initiatives (O'Gorman and Kautonen, 2004); however, no clear evidence of successful policy intervention has been reported (see e.g. Martin and Sunley, 2003, for a critical discussion). Studies have even illustrated that in many cases, policy measures for cluster formation have failed or resulted in different outcomes than originally envisioned (Feldman and Francis, 2004). The early work of Marshall suggested that clustering (agglomeration) occurs because firms aim to benefit from reduced transport costs, whether they are associated with people, goods, and/or ideas (Marshall, 1920). These assumptions have been somewhat criticised for being too

general, however, because they do not consider the likely heterogeneity among firms (Ellison et al., 2010). Ellison and Glaeser (1997) claim that clusters emerge based on two main premises: localised industry-specific spillovers and natural cost advantages. Industry-specific spillovers arise because of the co-localisation of businesses, where synergies based on factors such as common input needs and supplier-customer relationships represent a competitive advantage. A natural advantage is premised by unique access to not only inputs such as raw materials but also factors such as access to labour and proximity to critical infrastructure (Ellison and Glaeser, 1999). Similar results are reported by Breshnahan et al. (2001) in their study of several cluster developments. Other scholars have emphasised the importance of entrepreneurs in cluster formation processes, owing to their unique ability to establish new firms, create new markets, and reorganise economic activity (Feldman and Francis, 2004). Part of the explanation of the value of entrepreneurs is their inherent relation to the local environment in which they belong and their recognition of this relationship.

Feldman and Francis (2004) claim that regional cluster formation processes are heavily marked by entrepreneurial activity and that the formation process can be depicted in three general stages. First, the region is inert, and little or no entrepreneurial activity exists. Owing to exogenous shocks—e.g., changing market conditions because of corporate mergers or new firms entering a region—the entrepreneurial inertia may change into an active entrepreneurial state. In the second stage, the cluster emerges because of increased entrepreneurial activity and the ability of entrepreneurs to appropriate valuable resources. In addition, if the emerging cluster is able to develop infrastructure and support institutions, growth tendencies can be realised, which enhances the cluster's ability to attract capital and other stimuli. As the emerging cluster reaches a critical mass, it will assume the shape of a fully functioning cluster. In this final stage, the cluster may possess the status of

a preferable location for particular industries or technologies. While Feldman and Francis' (2004) illustration of the cluster formation process offers a thorough description, the authors stress that the process is neither linear nor predictable. In addition, a cluster will emerge based on idiosyncratic conditions, which in turn give any cluster its own identity. For instance, a recent study shows that the establishment of linkages to external knowledge providers facilitates grounds for cluster emergence (Henn, 2013) and that the ability of (transnational) entrepreneurs, first, to establish such linkages and, second, to uphold the knowledge flow might gradually facilitate regional cluster structures.

2.1.3 The similarities and distinctions between regional innovation systems and clusters

RISs and clusters share several characteristics. For example, firms located in these structures often obtain higher competitiveness and economic performance than firms located outside them because of agglomeration effects (e.g. Tallman et al., 2004; Lechner and Leyronas, 2012). In addition, clusters and RISs are characterised by higher rates of new firm formation, innovation, and interfirm learning (Schmitz, 1999). Because of these and other similarities, it may be difficult to establish a clear distinction between the concepts. However, a review of the literature shows that clusters are regarded as being highly sector specific, while RISs are more generic in terms of sector orientation (Doloreux and Parto, 2004; Asheim and Coenen, 2005; Asheim et al., 2011). Furthermore, clusters generally place a greater emphasis on geographical co-location between firms and institutions (Porter, 1998b) than do RISs. The distinction between the concept is also apparent from their definitions, with clusters defined as '*a concentration of "inter-dependent" firms within the same or adjacent industrial sectors in a small geographic area*' (Asheim and Coenen, 2005, p. 1174) and RISs defined as '*interacting knowledge generation and exploitation subsystems linked to global, national and other regional systems*' (Cooke, 2004, p. 3).

To further illustrate the difference between the two concepts, RISs and clusters can (and often do) co-exist in the same defined geographical space (Asheim and Coenen, 2005). Given their similarities and differences, the combination of these concepts has the potential to provide a more holistic view of various phenomena occurring at the regional (macro) level.

Finally, a review of the literature reveals that the RIS concept suffers from the lack of a precise conceptualisation to describe what a RIS actually consists of and, more important, to answer the question of how one 'knows' a RIS when one sees it (Markusen, 1999). The lack of such a conceptualisation may be explained by the idiosyncratic nature of regions (Doloreux and Parto, 2005). Nevertheless, I believe that precisely defining the RIS concept in this way represents not only an analytical challenge but also an opportunity to apply this concept in a variety of contexts.

2.2 Strategic alliances and their dynamics

Interfirm relationships assume a variety of shapes in terms of, e.g., structure, content, and degree of formality. A number of studies have explored issues related to mergers and acquisitions (Hagedoorn and Duysters, 2002; Cartwright and Schoenberg, 2006; Cloudt et al., 2006) and joint ventures (Kogut, 1988; Inkpen and Dinur, 1998). These relationships are characterised by the distribution of control (mergers and acquisitions) and the establishment of new organisational units involving two or more individual firms (joint ventures), representing the most formal modes of interfirm relationships. A different mode refers to strategic alliances, recognised by collaboration between two or more partners and premised by different levels and modes of governance. A strategic alliance usually does not involve mergers, acquisitions, or the joint establishment of new separate organisational units. Instead, it is a '[...] *long-term cooperative arrangement between two or more independent firms that engage in business activities for mutual economic gain*' (Inkpen and Tsang,

2007, p. 483) or a '[...] *deliberate relation between otherwise autonomous organizations for the joint accomplishment of individual operating goals*' (Schermerhorn, 1975, 847).

In recent years, strategic alliances have become a central component of companies' growth strategies (Kale and Singh, 2009). This trend is also observed in scholarly society (Gomes et al., 2014), rendering strategic alliances the most frequently studied form of interorganisational relationships (Parmigiani and Rivera-Santos, 2011). The extensive body of research has illustrated that firms can gain from alliances in several ways (Spekman et al., 1998 offers an extensive review of earlier findings). For example, alliances may provide firms with access to resources and knowledge (Das and Teng, 2000; Harrison et al., 2001; Rothaermel and Boeker, 2008; Sammarra and Biggiero, 2008) or to new domestic or international markets (BarNir and Smith, 2002; Garcia-Canal et al., 2002), facilitate legitimacy gains (Baum and Oliver, 1991; Stuart et al., 1999; Dacin et al., 2007), or increase performance owing to improved innovative capabilities (Stuart, 2000; Lahiri and Narayanan, 2013). Moreover, Inkpen and Tsang (2007) state that alliances essentially provide a platform for organisational learning because of knowledge exchange between partners.

The benefits of an alliance vary based on a firm's earlier alliance experience. For firms entering into an alliance for the first time, the potential benefits will, in most cases, surpass those received by a firm with rich experience in previous alliances (Gulati, 1995b). Additionally, studies have shown that the potential gain from an alliance will most likely be highest within the first period of the partnership (Shi et al., 2012). A different aspect related to alliance experience concerns the availability of potential alliance partners. Firms with rich experiences possess alliance capabilities that will positively affect their access to exchange partners (Stuart, 1998). Conversely, firms

that suffer from poorly developed network embeddedness and a lack of alliance experience are more likely to face difficulties in finding the right partner (Ahuja et al., 2009).

The reasons for strategic alliance formation often relate to a firm's surroundings (Gulati, 1998). If a firm is able to conduct its business independently of changes in the environment, the firm will most likely not need to form a strategic alliance. However, if a firm faces challenges arising from alterations to the external environment, they firm may need to enter into cooperative arrangements (Park et al., 2002). Kogut (1988) suggests that there are three main motivations for the formation of joint ventures, which, according to Gulati (1998), are also applicable to strategic alliances: 1) to reduce transaction costs, 2) to enhance competitive positioning, and 3) to ease knowledge transfer. Other scholars have argued that the social contexts in which firms exist influence patterns of alliance formation (Gulati, 1995b; 1998; 1999; Stern et al., 2013) and that geographical distance (negatively) affects the propensity for firms to establish alliances (Reuer and Lahiri, 2014). However, a number of scholars have argued the main motive for firms to enter into alliances relates to resource and knowledge needs (Eisenhardt and Schoonhoven, 1996; Tsang, 1998; Das and Teng, 2000; Yasuda, 2005). Indeed, when alliances are formed, alliance partners generally endow parts of their resource base to the alliance with the expectation of generating common benefits from a shared resource base (Lavie, 2006). Furthermore, in addition to the amount and variety of resources, the level of match between collaborating firms' resources may generate benefits (Bierly and Gallagher, 2007; Mitsuhashi and Greve, 2009). Given the variety of factors noted above, one specific explanatory variable can hardly explain alliance formation.

While strategic alliances may engender many potential benefits, they have been shown to suffer from failure rates ranging between 50% and 70% (Hughes and Weiss, 2007; Kale and Singh, 2009; Chao, 2011). From the perspective of small firms, factors such as size and power differences from larger partners can represent potential sources for alliance failure (Almuti and Kathawala, 2001; Kale et al., 2002). Further, scholars have suggested a number of factors explaining this problem, one of which refers to different kinds of partner asymmetries—i.e., alliances rarely comprise equals (Harrigan, 1988). Size asymmetry, for example, refers to the relative difference in size between firms in an alliance. Size asymmetry can result in unfavourable outcomes for small firms because large firms have the power to engage in opportunistic behaviour towards their smaller partners (Holmlund and Kock, 1996; Stuart, 1998; Papadopoulos et al., 2008; Yang et al., 2014). Similarly, interdependence asymmetry refers to the difference in relative dependence between partners in an alliance (Gulati and Sytch, 2007; Villanueva et al., 2012). In this regard, studies have found that higher interdependence asymmetry increases the possibility of partner conflicts (Kumar et al., 1995). Increasingly, resources and knowledge critical for a firm's development and prosperity exist beyond firm boundaries; thus, small firms in particular have the potential to extract value from alliances (Van-Gils and Swart, 2009). Alliances between small and large firms are characterised by two patterns: on one hand, small firms may depend on a large partner to attain survival and growth; on the other, in such alliances, small firms may suffer from exploitation owing to a lack of bargaining power and experience (Yang et al., 2014). Knowledge about size-asymmetrical alliances is limited (Yang et al., 2014), and recently, scholars have called for further research focusing on such relationships (James et al., 2014).

Previous studies have shown that the proximity perspective provides a useful framework for understanding alliance dynamics (Broekel and Boschma, 2012;

Hansen, 2014b). While geographical proximity—the physical distance that separates two or more units—has attracted the most attention from scholars (Hansen, 2014b), a number of nonspatial proximity dimensions have emerged in the wake of the growing literature. Reviewing current literature, Knobens and Oerlemans (2006) find that seven main categories are used: geographical, organisational, cultural, technological, cognitive, institutional, and social. Several second-order categories are also identified. By reducing this plethora of overlapping and concurring proximity dimensions into three main categories, Knobens and Oerlemans (2006) propose that the geographical, organisational, and technological proximity dimensions are more appropriate for studying interfirm collaboration. Their argument for a simplified framework mainly rests on the need to reduce conceptual ambiguity and to thereby facilitate development of comparable and cumulative knowledge in future research.

Following the argument by Knobens and Oerlemans, this thesis also adopts geographical, organisational, and technological proximity as lenses for exploring alliance dynamics. This choice deserves some explanation. Geographical proximity (or distance) may represent a particularly decisive factor in research on the external relationships of small, inexperienced firms located in peripheral regions because of their liabilities of smallness, newness, and so forth. However, peripheral firms' industry-specific inexperience and lack of alliance capabilities induce the need to also incorporate nonspatial forms of proximity. Several studies have explored combinations of cognitive, organisational, social, institutional, and/or cultural proximities between collaborators (e.g. Kirat and Lung, 1999; Capaldo and Petruzzelli, 2014; Hansen, 2014a; Hansen, 2014b; Paci et al., 2014), and the aims and results of these studies commonly address issues related to the same higher-order subject, namely, the characteristics of functional (or dysfunctional) organisations. The narrow focus of these studies illustrates that organisational proximity suffers from

considerable conceptual ambiguity (Knoben and Oerlemans, 2006). Torre and Rallet (2005) refer to organisational proximity as the relational dimension, claiming that sufficient organisational proximity may create the necessary environment for actors to communicate and interact because of their similar sets of, e.g., values, cultures, and routines. Furthermore, these similarities may lead to a shared understanding between collaborators (Meister and Werker, 2004), thus reducing uncertainty and opportunism and supporting communication (Cassi and Plunket, 2013). Finally, organisationally proximate partners may benefit from having more effective ways of orchestrating and complementing their exchange of information, knowledge, and resources (Burmeister and Colletis-Wahl, 1997). Consequently, by applying organisational proximity as a measure of the organisationally related issues among collaborators, this thesis incorporates an array of connected concepts without specifying a definition for this construct.

While organisational proximity focuses on *how* collaborators exchange knowledge and ideas, *what* collaborators exchange with each other and, more important, how collaborators benefit from these exchanges are captured by the technological proximity dimension. This third dimension thus refers to the sharing of technological experiences and knowledge bases among collaborating firms (Lane and Lubatkin, 1998; Knoben and Oerlemans, 2006) and the degree of heterogeneity in these competencies and capabilities (Schamp et al., 2004; Boschma, 2005b). Similarity in different firms' knowledge bases has been shown to foster collaboration because it may facilitate effective communication, learning processes, and knowledge sharing (Cantner and Meder, 2007; Cassi and Plunket, 2013). Technological proximity coincides with organisational proximity when it is related to the sharing of knowledge across organisational borders. For example, the degree of complexity will affect firms' ability to transfer and process technology (Sorenson et al., 2006). Thus, if two actors

possess different levels of knowledge about a technology, communication about the technology will be hindered (Menzel, 2008).

In this discussion, I have explained my reasons for following the argument proposed by Knoblen and Oerlemans (2006) for using geographical, organisational, and technological proximity as lenses for exploring alliance dynamics. In particular, the organisational dimension deserves attention because of its complex construct, as illustrated in the current literature. While geographical proximity and technological proximity focus on rather specific issues, this thesis views organisational proximity as a construct that includes a plethora of elements that characterise organisations (e.g., culture, social relations, and cognitive processes).

2.3 Resource mobilisation and utilisation and the role of firm networks

One of the first scholars to consider resources in connection with a firm's competitive position was Edith Penrose. She argued that the use of resources affects firm growth (Penrose, 1959). Rumelt clarified this notion by claiming that '*[...] a firm's competitive position is defined by a bundle of unique resources and relationships*' (1984, p. 557). In the wake of Penrose's work and other early contributors, a significant segment of the strategic management (see Barney et al., 2011, for a review of key publications) and entrepreneurship literature (e.g. Eisenhardt and Schoonhoven, 1996; Alvarez and Busenitz, 2001; Lechner and Dowling, 2003; Teng, 2007; Huggins and Johnston, 2010) has focused on the role of resources as a means for firm growth and development.

Resources are defined as '*[...] tangible and intangible assets firms use to conceive of and implement their strategies*' (Barney and Arikan, 2001, p. 138). Such resources include, but are not limited to, financial, physical, human, and organisational capital. Furthermore, the resource-based view (RBV) rests on two fundamental assumptions

regarding the potential for firms to attain a competitive advantage through resource combinations (Barney, 1991). First, resources may be heterogeneous, i.e., competing firms may possess different bundles of resources. Second, resources may be immobile, i.e., heterogeneity may exist over time (Barney and Arkan, 2001, p. 141). Consequently, resource heterogeneity and immobility represent the basis for firms' different levels of competitiveness. Furthermore, the value of a resource is premised by conditions such as external environments and firm strategy (Priem and Butler, 2001) as well as rareness, inimitability, and nonsubstitutability (Barney, 1991). A meta-analysis of articles based on RBV published since 1991 shows that there is grounded empirical support for the relationship between resources and firm performance when the resources meet the RBV criteria (Crook et al., 2008).

Previous studies have demonstrated that over time, the value and applicability of a resource base can change dramatically because of changes in a firm's demands for specific resources (Amit and Schoemaker, 1993; Lichtenstein and Brush, 2001; McKelvie and Davidsson, 2009). Lichtenstein and Brush (2001), for example, report that for firms experiencing rapid growth, intangible resources, such as knowledge, reputation, and interfirm relationships, are considered more salient than traditional types of resources (e.g., financial capital). These studies show that resource bases are very dynamic; thus, managers in new or rapidly growing firms should carefully consider the need for new resources and the development of existing resources when forming short- and long-run strategies (Sirmon et al., 2011).

A growing literature based on the RBV of the firm emphasises how the bundling of resources can create a sustained competitive advantage (Prahalad and Hamel, 1990; Barney, 1991; Dollinger, 1995; Sirmon et al., 2008). This literature, however, has almost exclusively focused on firms with an existing rich bundle of resources that can

be refined and exploited to create a competitive advantage (Greene et al., 1999). An emergent or growing entrepreneurial venture will normally not have access to or control of the resources needed to reach strategic goals owing to resource constraints (Stevenson and Gumpert, 1985; Brush et al., 2001). For small or young firms, the problem at hand relates to the resource mobilisation process (Hanlon and Saunders, 2007), an issue to which scholars have devoted considerable attention in recent years. Maritan and Peteraf (2011), for example, call for scholars to examine the interplay between building and buying resources, as limited knowledge about how resource acquisition and development processes evolve over time exists.

In a recent study, Sirmon et al. (2011) introduce the concept of resource orchestration², which explicitly addresses managers/entrepreneurs' role in selecting, structuring, bundling, and leveraging a firm's resources. The authors suggest that managers' resource management is affected by variance on three dimensions: 1) breadth (the firm's strategies and competitive dynamics), 2) depth (the manager's position in the organisation), and 3) life cycle (the firm's stage of maturity) (Sirmon et al., 2011). Following this new framework, several scholars have provided novel insights for future studies on firm resources. Some have claimed that resource orchestration in fact represents the very underpinning of firm growth (Wright and Stigliani, 2012), whereas others have found that firms with scarce resource bases are particularly dependent upon their ability to structure, bundle, and leverage their resources (Wales et al., 2013). The resource orchestration concept addresses a gap in the current RBV literature, namely, how resources are actually used to create a

² Bricolage (Baker and Nelson, 2005) and effectuation (Sarasvathy, 2001) provide similar approaches to studying the entrepreneurial processes of creating and exploiting opportunities according to a firm's resources at hand (Fisher, 2012). Despite the similarities, however, the concepts differ from resource orchestration. For example, bricolage and effectuation have mainly addressed the earliest stages of venture creation, focusing less on the growth stage (Fisher, 2012; Wright and Stigliani, 2012).

competitive advantage (Kraaijenbrink et al., 2010). It also relates to Hansen et al.'s (2004, p. 1280) statement that '[...] *what a firm does with its resources is at least as important as which resources it possesses*'. The idea of resource orchestration thus offers an alternative, and perhaps more constructive, view to the traditional focus on the risks associated with resource scarcity. Finally, this concept is in line with the strategic entrepreneurship perspective as proposed by (Hitt et al., 2001). The sum of developments in the recent decade has fostered a revitalisation of RBV.

In general, firms depend on their surroundings for the provision of resources (Pfeffer and Salancik, 2003). As with strategic alliances and firm acquisitions (Das and Teng, 2000; Teng, 2007; Wiklund and Shepherd, 2009), the accessibility of resources and the ability to develop inherent resources is often premised on entrepreneurs' ability to manage and benefit from network relations (Ucbasaran et al., 2001; Baker and Nelson, 2005). Network management has two aims: 1) to extend the reach of resources and 2) to acquire resources (Ozdemir et al., 2014). A firm's ability to access critical resources through networks, however, is premised on the composition of the network. Firms must find partners that possess the resources they need for a network to provide value and, equally important, must ensure that these partners are willing to share those resources.

Previous studies have shown that the value of networking goes beyond the sheer aspect of economic gains via resource acquisition. In an entrepreneurial setting, networks can also play a crucial role in firms' ability to gain knowledge of new opportunities (Ucbasaran et al., 2001) and learn (Cooke and Morgan, 1998; Mackinnon et al., 2004). The existing literature on firm networks mainly focuses on the earliest stages of an entrepreneurial venture (i.e., the start-up phase); thus, knowledge about the characteristics of entrepreneurial networks when the venture

enters later stages (e.g., the growth phase) is limited (Wu et al., 2008). However, some novel studies have reported on the changing roles of networks as firms develop. Scholars have proposed that studying the relational mix—i.e., the use of different types of networks—is more appropriate than focusing on network size when investigating network effects on firm development (Lechner and Dowling, 2003; Lechner et al., 2006; Huggins and Johnston, 2010). Others have found that the geographical nature of a firm's network changes from local/regional to external as firms grow (see Street and Cameron, 2007; and Jack, 2010 for reviews). Moreover, when firms grow and develop, networks may evolve from sheer path-dependent networks to more intentionally managed networks as firms' reputation and access to pertinent resources and partners increases (Hite and Hesterley, 2001). A network can thus shift from a loose contact network to a more formalised alliance network (Huggins and Johnston, 2010). Overall, previous research indicates that, as with resources, the use and composition of a network is dynamic and dependent upon a firm's strategic objectives (Hite and Hesterley, 2001).

2.4 Current knowledge gaps

The theoretical concepts used in this thesis are comprehensive in terms of their complexity and the amount of scholarly attention they have received. Despite their stage of maturity, however, several areas remain theoretically and empirically underexplored. In the following paragraphs, I present a number of knowledge gaps identified from literature reviews. The gaps are outlined in three main areas: clusters and RISs, strategic alliances, and firm resources.

The cluster and RIS literature suffers from limited knowledge about the emergence of clusters and RISs and their development over time (Tödtling and Trippl, 2013). Studies have identified a number of individual factors that potentially stimulate emergence,

such as well-founded policy initiatives (O'Gorman and Kautonen, 2004); the co-location of businesses owing to common input needs and access to, e.g., labour and infrastructure (Ellison and Glaeser, 1999; Ellison et al., 2010); the presence of active entrepreneurs (Feldman and Francis, 2004; Henn, 2013); and the ability of large anchor firms to produce spin-offs and attract other establishments (Feldman, 2003; Feldman and Lendel, 2010). While these studies have provided suggestions about the potential stimulus underlying cluster and RIS emergence, the results have not been clear, and the evolutionary processes related to cluster and RISs remain unexamined³. Consequently, cluster and RIS emergence and evolution remain theoretically and empirically underexplored areas in the literature. In recent years, several scholars have tried to address this shortcoming. Martin and Sunley (2011), for example, introduce the 'adaptive cycle' approach, which focuses on the processes through which different episodic events shape the evolution of 'complex systems' (e.g., clusters and RISs). Further, Menzel and Fornahl (2010) suggest that the emergence, growth, decline, and renewal of clusters depend on differences in firms' technological heterogeneity. Because of the idiosyncratic nature of regions, I do not intend to suggest that a universal model of cluster or RIS emergence/evolution should be developed (nor do I imply that it is possible). This discussion simply aims to stress that these issues represent important gaps in the cluster and RIS literature that deserve attention in future research.

A different gap in the cluster and RIS literature relates to the research context. Current knowledge is built almost exclusively on studies conducted in the well-known and often world-leading clusters and regions of the world (Doloreux and Dionne, 2008); thus ordinary or peripheral regions are generally neglected. As a result of this 'Silicon Valley fever' (Benneworth, 2003), a sense of polarisation has emerged between the

³ See, e.g., Kenney and Patton (2006) and Dahl et al. (2010) for exceptions.

perceptions of 'super regions', on the one hand, and those of the remaining regions, on the other. Indeed, according to Cooke and Morgan (1998), only three regions deserve the status of RIS based on a strict reading of current literature: Silicon Valley (high-tech), Emilia-Romagna (automotive and agro-food), and Baden-Württemberg (automotive and ICTs). This polarisation is something of a paradox when one considers the means proposed in regional policies to promote the growth and development of lagging regions.

The strategic alliance literature suffers from three main deficiencies. First, longitudinal studies focusing on the dynamic processes surrounding the establishment and development of alliances are lacking (Gomes et al., 2014). Second, previous studies have failed to provide insights about alliances between large and small firms (Yang et al., 2014). Finally, as with the cluster and RIS literature, few studies have investigated interfirm collaboration in peripheral contexts or between small/inexperienced peripheral firms and large/experienced partners from central regions. The rapid growth of asymmetrical alliances (and alliances in general) and the simultaneously growing rate of alliance failure (Hughes and Weiss, 2007; Chao, 2011) call for the generation of further knowledge about this kind of interfirm relation.

The RBV literature suffers from gaps similar to those in the strategic alliance literature. Perhaps the most prominent gap refers to the lack of longitudinal studies investigating the evolution of different resource dynamics, i.e., changes in the types of resources that firms depend on as they develop and grow. Maritan and Peteraf (2011), for example, claim that knowledge about the evolution of resource acquisition and development is limited. Furthermore, the heterogeneity, inimitability, and substitutability of resources (Barney, 1991) likely change over time owing to, e.g., changes in the supply and demand for specific resources or in market structures. A

recent review by Kraaijenbrink et al. (2010) identifies several avenues for further developing the RBV. For example, the authors call for studies focusing on the differential contribution of various types of resources to a sustained competitive advantage. In addition, the process of selecting and intertwining newly acquired resources with a firm's existing resource base constitutes as a novel direction for future research.

2.5 Theoretical framework

The previous sections present the current state of the theoretical concepts that guide this thesis and the associated knowledge gaps. Figure 1 in Chapter 1.2 illustrates that this thesis builds on three research questions that address particular theoretical perspectives at different levels of analysis. As the review of the literature and existing knowledge gaps in the previous sections shows, previous studies do not sufficiently address the possible interconnections that exist between the different theoretical perspectives. This thesis thus seeks to address this particular gap. Figure 2 illustrates a theoretical framework suggesting that the study of regional development processes depends on insights from several literature streams. In addition, as Figure 1 illustrates, multilevel approaches that address phenomena at both the firm and the regional level are necessary to build a holistic understanding of the phenomena. The thesis builds on these assumptions by exploring individual phenomena at different levels of analysis in four different empirical papers.

Papers 1 and 2 draw on theoretical insights from the RIS and cluster literature to address the first research question of the thesis. Specifically, Paper 1 studies how an exogenous shock mitigated the three innovation barriers presented in Chapter 1.2.1, i.e., organisational thinness, fragmentation, and lock-in (Isaksen, 2001; Nauwelaers and Wintjes, 2003; Tödtling and Trippel, 2005), and investigates how the mitigation of

these innovation barriers facilitated regional path creation processes by increasing regional firms' access to knowledge, resources, and firm networks. Because of these processes, the exogenous shock fostered the creation of an emerging RIS over time. Paper 2 studies how an exogenous shock stimulated the establishment of strategic alliances between small regional firms and between small regional firms and large national/international firms and how these firm-level developments increased industrial sectorialisation (i.e., increased the number of firms operating in the oil and gas supply industry). Over time, as the number of oil and gas-related suppliers, and the interrelations between them, increased, an emerging cluster structure was observed. Papers 1 and 2 contribute to the thesis by illustrating how large-scale petroleum projects (i.e., exogenous shocks) can trigger RIS and cluster formation in peripheral regions owing to project developers' authority over the central stakeholders. These findings advance theory, first, by moving away from the traditional view that RISs and clusters exist only in the most successful regions and, second, by providing insights into the mechanisms that underlie the formation of such systemic structures.

Paper 3 draws on the proximity framework to address the second research question of the thesis. The paper investigates five asymmetrically sized strategic alliances and analyses them in terms of organisational, technological, and geographical proximity between the small and large firms in the alliance. The findings illustrate that nonspatial (organisational and technological) dimensions of proximity can mitigate the 'smallness challenge' in asymmetrical alliances and compensate for a lack of geographical proximity. The paper contributes to the thesis by illustrating how peripherally located firms can develop through large-partner alliances if they manage to develop proximity to their large partner.

Paper 4 draws on theoretical insights from the RBV and the growth and strategic alliance literature to address the third research question of the thesis. The paper illustrates the multifaceted process of how an entrepreneurial firm managed to enter into a large-partner alliance in order to achieve growth in new markets. Notably, the paper illustrates that firms must be able to develop their internal resources and network relations to position themselves in relation to potential alliance partners. Furthermore, the paper shows that strategic alliances represent a novel strategy for accessing external resources and illustrates that a firm's ability to orchestrate the acquired resources represents a key tenet for achieving growth. The paper contributes to the thesis by illustrating the complex processes surrounding resource acquisition and alliance formation and by demonstrating that small entrepreneurial firms can achieve growth through alliances if they are able to manage the alliance relationship.

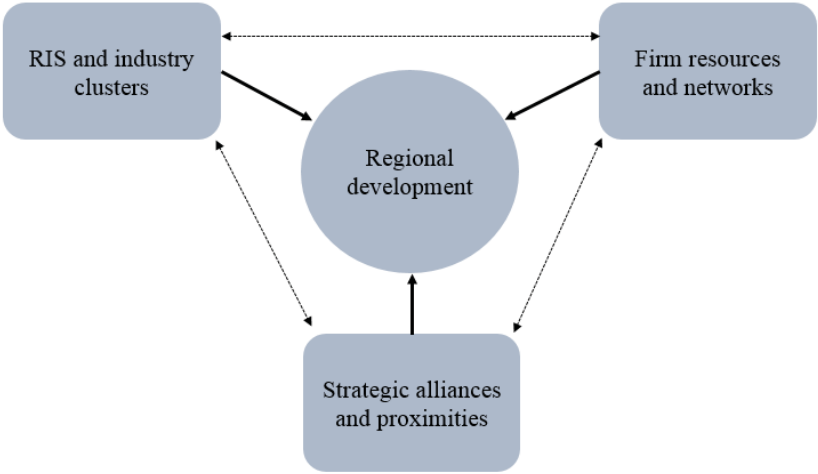


Figure 2: Theoretical framework

3. Methodology

This chapter describes the methodological approach used to explore the research questions stated in Chapter 1.2. In the first section, I briefly position my underlying philosophical position in the critical realist paradigm before providing a description of the context of this research project. Next, I present and discuss my choice of research design, including the data collection strategy, analysis techniques, quality measures, and limitations. Finally, I discuss the ethical aspects of my research.

3.1 Positioning in the philosophy of sciences

A philosophical paradigm can be understood as a researcher's '*complete view of reality, or way of seeing*' (Morgan, 1980, p. 606) or as a researcher's worldview (Guba and Lincoln, 1994). In other words, a paradigm refers to the researcher's fundamental view on the philosophical underpinnings of research. This thesis follows the critical realist paradigm (Bhaskar, 1975), which is characterised as a middle ground between the extremes of positivism and constructivism (Stiles, 2003). In Table 2, I present the characteristics of the three distinct paradigms to illustrate the differences that may exist with regards to ontology (the view on reality), epistemology (how knowledge is created), methodology (ways to acquire knowledge), and research approach. Then, I discuss some characteristics of the critical realist paradigm and the way in which it guided my research on regional development processes.

Table 2 illustrates that positivism and constructivism fundamentally differ across all aspects of a research paradigm. Concerning ontology, positivists have been characterised as naive realists

Table 2: Research paradigms and their characteristics⁴

	Positivism	Critical realism	Constructivism
Ontology	Reality is real and apprehensible	Reality is 'real' but only imperfectly and probabilistically apprehensible	Reality consists of multiple constructed realities
Epistemology	Objective; findings are true	Objective and subjective; findings are probably true	Transactional (subjective); findings are created
(Common) Methodology	Survey; verification of hypotheses	Case studies; triangulation and interpretation; mixed methods	Hermeneutical/ dialectical; 'passionate participant'
Research approach	Deductive	Inductive and deductive	Inductive

because they view reality as real and perfectly apprehensible. Conversely, constructivists believe that reality is constructed and that there are as many realities as there are individuals. Critical realists share the positivist view that reality is real; however, an important distinction is critical realists' notion that reality is only imperfectly and probabilistically apprehensible (Guba and Lincoln, 1994). Thus, critical realists aim to *understand* social phenomena through a multifaceted view on reality, for instance, by using theoretical frameworks that help explain the rationale behind people's actions (Stiles, 2003). Moreover, to understand and expose the logic behind a social phenomenon, critical realists emphasise the meanings, intentions, beliefs, and perspectives of the participants in the events and processes under study (Maxwell, 2009).

Concerning epistemology, critical realists have a combined stance regarding the objective/ subjective view of how to create knowledge. Rejecting the claim that findings are either true (objective positivism) or simply individually constructed (subjective constructivism), critical realists hold that findings are *probably* true—people's knowledge about a phenomenon may be partial or incomplete (May, 1993)—and that they must be *interpreted* to extract meaning (Sayer, 1992). To

⁴ Based on Guba and Lincoln, 1994, Healy and Perry, 2000, and Stiles, 2003

interpret research findings, critical realists participate in real-world events to better understand what is being studied (Healy and Perry, 2000). In contrast, positivists separate themselves from what they study to obtain 'true'/objective findings (Healy and Perry, 2000). Finally, critical realists' interpretations are neither value free nor value laden but are rather value aware; thus, objectivity is seen more as an ideal than as a valid aim (Guba and Lincoln, 1994).

Concerning methodology, constructivists and critical realists alike largely use qualitative techniques to collect situational information that captures the meanings and purposes that underlie social phenomena (Guba and Lincoln, 1994). For example, critical realists frequently use case studies as a technique to discover new relationships and build understanding (Riege, 2003). To support or reinforce qualitative inquiries, critical realists may also employ quantitative techniques that largely reside with positivists (Stiles, 2003). I relied on the case study technique to explore regional development processes. The rationale behind this choice rests on two main arguments. First, to build knowledge about the complex and dynamic nature of an *ongoing* development process, interview data were deemed most appropriate because they are better able to capture evolving processes. Second, because of the conceptual state of the study—i.e., the lack of previous studies in similar contexts—the thesis aims to build an in-depth understanding that can hardly be captured by quantitative techniques.

Research approaches are often distinguished between inductive and deductive, referring to the researcher's way of reasoning when acquiring new knowledge (Hyde, 2000). As explained by Stiles (2003), critical realists dynamically alter the inductive and deductive approaches. An inductive approach is characterised by using empirical data as the starting point for deriving concepts, themes, or models through

interpretation (Strauss and Corbin, 1998; Thomas, 2006). Conversely, deduction refers to situations where the researcher aims to test whether the data are consistent with extant theories or hypotheses that the researcher developed (Thomas, 2006). The first stages of developing this thesis followed an inductive approach. Specifically, the broad data collection that was conducted in 2008-2009 was characterised by an inductive approach towards theory development, as the primary aim was to gain contextual insight. Through the data analysis, I identified emerging themes and concepts that provided a premise for theoretical focus and thematic narrowing.

By conducting research in the critical realist paradigm, I acknowledge that my arguments and interpretations are value laden and to some extent subjective owing to tacit knowledge and prior experiences. Simultaneously, I would argue that qualitative empirical research could not be conducted on the basis of absolute objectivity. All individuals are marked by their personal experiences, and these experiences will ultimately affect the processes of collecting, analysing, and interpreting data. Consequently, the results and conclusions in this thesis are drawn based on a combination of my innate values and thought patterns, the constructs provided by individual informants, and the insights provided by existing theories (i.e., the critical realist inductive-deductive alternation). This approach would not be accepted by, e.g., grounded theorists, who believe that data, values, and beliefs should guide the choice of theoretical links (Turner, 1981; Glaser, 1992). Finally, although I position my research in the critical realist paradigm, I agree with Maxwell (2009), who questions researchers' ability to position themselves within the 'correct' philosophical stance. After reviewing the philosophy of science literature, I would argue that researchers are rarely able to pinpoint their exact position within the related paradigms because of overlapping and partly substituting characteristics.

As illustrated in Table 3, philosophical paradigms are also characterised by their use of particular research methodologies. Positivists, for example, rely mostly on surveys or other quantitative techniques to objectively investigate reality (Healy and Perry, 2000). Conversely, constructivists often emphasise the use of hermeneutical approaches to obtain subjective (created) findings. Critical realists then seek a combination of objective and subjective findings and often rely on case studies, allowing for triangulation and interpretation. In the following chapters, I will provide a thorough description of the methodological approach that guides this thesis.

3.2 Research context

This thesis studies micro- and macro-level developments in the Helgeland region, which is a peripheral region located in Nordland County in northern Norway. Helgeland consists of 18 municipalities with a total population of 78,244 (2014⁵), and the four most populated municipalities—Rana (25,943), Vefsn (13,347), Alstahaug (7,394), and Brønnøy (7,931)—have the status of city centres (Figure 3). This thesis focuses mainly on the Alstahaug municipality because of its prominent oil and gas-related development in recent years.

Helgeland has a long tradition in primary industries such as agriculture and fisheries and a long history of mechanical services related to offshore vessels (Alstahaug, in particular).

⁵ Statistics Norway: www.ssb.no



Figure 3: The geographical context of the research

Furthermore, until 1988, Rana hosted a state-owned ironworks employing 4,500 workers. Then, in the early 1990s, the ironworks was privatised, restructured, and transformed from a cornerstone factory into a dynamic industrial environment.

Today, the region's industrial composition is characterised by rich natural resources. For example, the region is home to one of the internationally leading aquaculture industries. Furthermore, vast mineral resources and hydropower generation have stimulated the emergence of a large-scale process industry with related mechanical and engineering industries. The rationale behind the choice of this particular geographical context resides in developments that occurred during the period after 2008, namely, the rapid societal and industrial developments resulting from increased oil and gas activities. The development began upon the announcement of the oil company BP's decision to develop an oil and gas field located off the coast of Alstahaug. A long-lasting debate about the location of the onshore support infrastructure (supply base and operation support unit) then ensued, starting in 2005.

Originally, there were two alternatives: 1) Alstahaug, which suffered from limited infrastructure and a limited capacity of qualified and experienced support industry, and 2) Kristiansund, an established supply base possessing all the facilities required by oil and gas companies. In the wake of the decision to locate onshore support infrastructure to Alstahaug, the municipality's public administration initiated vast infrastructure investments to comply with potential future developments. By 2014, public and private actors had invested approximately €150 million. Furthermore, during the same period, the number of firms and people working in the oil and gas industry increased substantially. While Alstahaug was affected directly because of the location of the supply base, Rana experienced a more indirect effect resulting from the extraregional surge towards new development paths. More specifically, several individual firms initiated strategic measures to enter the oil and gas supply industry.

The characterisation of Helgeland as a peripheral region rests on several justifications. Despite the relative size of the population and land area, the region generally lacks the characteristics of prospering regions. For example, with only a few exceptions, the industrial composition has failed to develop national or international leadership in any specific line of industry. Furthermore, the lack of strong educational institutions has, over time, resulted in brain drain and declining populations and thereby hampered the chances for innovation and industrial development. The fragmented nature of the administrative setup and regional industry may have had a negative impact in both of these cases. A different element relates to the industry's limited network relations towards nationally and internationally leading industries. This limitation emerged in this thesis as one of the main barriers to firms' development—i.e., because firms lacked industry experience, they relied on the acquisition of external information. Table 3 illustrates some of the key demographic variables that characterise the research context.

Table 3: Demographic data on the geographical research context

	Alstahaug	Rana	Helgeland	Norway
Area	215 km ²	4,460 km ²	18,834 km ²	385,186 km ²
Population (2014)	7,394	25,943	78,244	5,109,056
Population growth (2000-2008)	-3.1%	-0.7%	-3.2%	5.8%
Population growth (2008-2014)	2.6%	3.4%	1.8%	7.9%
Population with university degree (2013)	25%	22.8%	18.9%	30.4%
Unemployment (2013)	2.9%	2%	2.7%	2.6%
Total employment (2013)	4,060	12,877	36,886	2,603,000
Primary sector (A) ¹	189	195	2,350	57,000
Secondary sector (B-F) ¹	557	3,243	7,959	524,000
Tertiary sector (G-U) ¹	3,314	9,439	26,577	2,022,000

¹: A-U refers to the NACE industry classification codes set by the European Commission (<http://ec.europa.eu/>)

3.3 Case study design

The case study approach is one of many research designs frequently used by scholars, particularly in the qualitative tradition. Robert K. Yin is considered the pioneer and one of the main advocates of the design, defining case studies as rich empirical descriptions of particular aspects of a phenomenon, typically through a variety of data sources (Yin, 2009). More precisely, the case design describes how data are collected and analysed to address a study's research question(s), which are typically questions of *how* and *why* phenomena exist or occur. The case may range to cover one or more individuals or firms, events, processes, regions, or even nations (Stake, 1995). A case study may constitute a useful research strategy when the context is considered relevant to the phenomenon under study (Yin, 2009), when depth is preferred over breadth, when insights about mechanisms rather than effects are investigated, and when the research is exploratory rather than confirmatory (Gerring, 2004). This thesis studies complex regional development processes in a context that differs from the contexts of mainstream research.

There are a number of ways to develop case studies. For example, Eisenhardt (1989; Eisenhardt and Graebner, 2007) mostly focuses on the case study's unique ability to build theory, whereas Yin (2009) has argued for a broad range of approaches to conduct case studies. Stake (1995), belonging in the constructionist paradigm, particularly emphasises the case study design for its ability to provide highly detailed and rich descriptions of social phenomena. The different approaches do not differ fundamentally, but they place varying emphasis on sample size, the use and role of theory, and analysis techniques. Gerring illustrates the fuzziness of case studies by seeing them as '[...] *an ideal type rather than a method with hard and fast rules*' (Gerring, 2004, p. 346). Regarding the use of case studies in the critical realist tradition, very few studies in this research tradition explicitly purport to use a case study design as the methodological logic (Easton, 2010).

This thesis employs case study designs based on a combination of the approaches mentioned above because of the different, but related, approaches and aims of the individual empirical papers regarding sample size, data collection duration, analysis techniques, and theory employment. Table 4 presents the main components of the case study designs employed in the individual papers.

As a general approach (independent of the type of case study), all four papers were developed and inspired by Eisenhardt's case study framework (1989). Across all papers, the process began with the identification of a broadly defined problem, or research question, to establish the focus. The problems emerged mainly because particular developments were occurring in the study's context or because data analysis in one paper resulted in the identification of linked research topics. Furthermore, I purposefully selected cases that could provide insights into the

Table 4: Case study characteristics

<i>Paper</i>	<i>Type of case study</i>	<i>Unit of analysis</i>	<i>Purpose</i>
#1	Single-case study (exploratory)	One peripheral region	Investigate how an exogenous shock stimulated RIS emergence (macro level)
#2	Multiple-case study (comparative)	Two strategic alliances	Investigate how large firms can stimulate firm-level development and cluster emergence
#3	Multiple-case study (comparative)	Five size-asymmetrical strategic alliances	Investigate the role and development of proximity in strategic alliances
#4	Single-case study (exploratory)	One entrepreneurial firm	Investigate the resource orchestration process as a means to enter a new market (micro level)

defined research questions based on theory. Because this thesis seeks to generate theory, cases were selected based on their potential contribution to extending theoretical debates. For example, the focus was on small firm-large firm relationships and development processes in peripheral regions. These issues represented potential ways to contribute to knowledge gaps in otherwise well-established literature streams.

The next steps involved the preparations for and execution of the data collection. As suggested by Eisenhardt, I emphasised the combination of interview data and other complementary secondary sources, such as news articles, web pages, and reports (academic and nonacademic). In some cases, I was also granted access to detailed internal strategy documents (premised by anonymity). In some cases, interviews were conducted accompanied by a colleague (mainly in the earliest phase), which facilitated the ability to ask follow-up questions and generally improved the nature of the discussion with the informant. After the data collection in 2008 and 2009 (Table 6), and as a response to increased theoretical insight or developments in the study context, consecutive data collections were conducted in parallel with the data

analysis. For example, in Paper 4, I was able to provide richness to the case by also collecting data about the focal firm's acquisition by a national private equity investor.

The next phase involved the data analysis (presented in more detail in Chapter 3.3.2). In brief, the analysis involved an initial process of reducing the data into thematic, theory-driven classes (Nvivo coding), followed by within-case and cross-case analyses. From the analysis, I compared the emerging constructs with the existing literature. When emerging constructs contradicted/contrasted or supported existing knowledge, findings in the literature increased their internal validity, strengthened their theoretical impact, and improved construct definitions (Eisenhardt, 1989).

The final phase of conducting a case study concerns the decision regarding when to stop adding cases and when to stop moving between theory and data, which refer to the point of saturation, i.e., when the observed phenomena is replicated or when the improvement to theory is reduced. Recognising the point of saturation is a challenge, and explicit guidelines for this purpose are lacking (Bowen, 2008). The use of established theoretical concepts in nontraditional contexts characterises the individual papers and the overall theme of this thesis. The use of such concepts both complicates and eases the ability to recognise a state of saturation in terms of data and theory. Because few prior studies have explored similar concepts in the context of peripheral regions (particularly in Papers 1-3), the basis of comparison with extant literature was limited. As a result, the question about saturation was largely decided based on the objective of each paper. In Paper 3, for example, saturation was recognised when the data and theoretical foundations provided the means necessary to develop a conceptual model. Moreover, the exploratory nature of the papers affected the ability to recognise saturation in each paper. The main activities of the research process are presented in Table 5.

In parallel with the activities presented in Table 5, I attended several international academic conferences and completed five PhD courses. In addition, I participated at a number of nonacademic conferences and industry seminars in the context of oil and gas and/or regional development, during which I frequently presented parts of my work. These activities increased my contextual understanding and allowed me to receive feedback and to establish relationships with individuals who later were included in the data collection.

Table 5: Main activities in the research process

<i>Main activities</i>	<i>Period</i>
<i>Participated in data collection regarding oil and gas development and took part in writing up a report on the subject. Developed a broad understanding about the context of the oil and gas industry and identified related effects on regional development.</i>	2008-2009
<i>Explored a wide range of literature (e.g., clusters, geography, absorptive capacity, collective efficiency, corporate entrepreneurship), attended two regional oil and gas conferences, developed initial research questions, and established a preliminary theoretical framework.</i>	2009-2010
<i>Narrowed the focus and selected the first case (Paper 4). Abandoned the initial research questions and developed new ones specifically focusing on the identified case. Performed longitudinal data collection and developed Paper 4.</i>	2010-2014
<i>Selected the cases for Paper 2, defined research questions, analysed the data collected in 2008 and 2009, and wrote up Paper 2.</i>	2012-2013
<i>Realised that the region under study had changed in the course of the research process and thus discovered the opportunity to develop a paper exploring macro-level development processes. Developed research questions, reanalysed the complete data set, and developed Paper 1.</i>	2013-2014
<i>Discovered, while developing Paper 4, the issues of size asymmetry in strategic alliances. Explored the proximity literature and developed research questions for Paper 3. Selected five cases, performed a focused data collection, and developed Paper 3.</i>	2013-2014

3.3.1 Case sampling and data collection

The number and nature of the cases selected for the individual papers deserves some reflection. First, the literature does not refer to an 'ideal' number of cases for the development of quality case studies. For example, Stake (1995) recommends using 1 or more cases, Eisenhardt (1989), 4-10 cases, and Yin, up to 30 (2009). The general principle is that the comparison of findings across several cases strengthens the robustness of the conclusions (Yin, 2009). Because of the different levels of analysis in the individual papers, the number of cases ranged from one to five. Second, the selected case(s) should be information rich to increase potential learning value (Patton, 2002). Because the thesis seeks to explore variations across different levels of analysis within the context of a peripheral region, a theoretical and stratified purposeful sampling logic was employed. Stratified purposeful sampling is described as choosing 'samples within samples' to capture variations bounded by a common core construct (Patton, 2002). For example, this sampling logic was employed in paper number 3, where I selected five small firms with different key characteristics to explore variations in small firm-large firm alliances according to specific proximity dynamics. Moreover, in this study, this sampling logic represented the most appropriate method for finding cases that were likely to extend theory about the complex processes surrounding the development of peripheral regions.

Prior to the case sampling, I chose the context that premises the overall theme of the thesis. A particular peripheral region was recognised because of developments occurring in 2008, namely, the decision that an offshore oil and gas field would be developed and potentially served from the focal region (see Chapter 1.4 for a description of the context). This context presented an opportunity to follow an array of potential developments resulting from the initiation of a large-scale oil and gas project. Second, I initiated a search for firms, either within the focal region or in

nearby regions, that demonstrated a reaction to the potential new set of business opportunities. An initial screening soon identified the cases explored in Papers 2 and 4, and I consequently established contact with these firms. The case selected for Paper 1 emerged as a result of an increased understanding of the higher-order development process: i.e., the region as a whole was developing as a result of events occurring at the micro level. Finally, the logic behind the selection of cases for Paper 3 emerged as I developed Papers 2 and 4. Specifically, in Papers 2 and 4, I realised that certain dynamics characterised small firm–large firm relationships. To explore this issue in more detail, I selected five cases of size-asymmetrical alliances, focusing on the small firm in such alliances. To obtain richness and variation across the cases, two small firms were selected based on their high geographical proximity to the large partner, and three small firms were selected based on their lack of geographical proximity to the large partner. While confined to the common context, the variations among the selected cases facilitated the opportunity to provide a multilevel analysis of the multifaceted regional development process.

A central concern in case study research is to employ a variety of data sources and to collect data at different levels in the research context. This thesis aims to build theory on issues that are underdeveloped in the current literature. Consequently, to achieve data richness, the selection of cases and informants followed the purposeful sampling logic as presented by Patton (2002). The value and significance of the data that informants provide are difficult to estimate prior to the interview. Therefore, the data set includes informants conducting a variety of functions within and beyond the immediate research context, occurring over time (Stake, 1995; Miller and Salkind, 2002).

Table 6: Overview of interviews conducted in 2008-2014

<i>Type of informant</i>	<i>Year</i>							<i>Total</i>
	2008	2009	2010	2011	2012	2013	2014	
<i>Firm representatives</i>	6	6	7	4	3	3	4	33
<i>Public officials</i>	3	3	0	1	2	0	0	9
<i>Sector experts</i>	2	1	0	0	1	0	0	4
<i>Total</i>	11	10	7	5	6	3	4	46 ⁶

In-depth interviews—one of the most important sources of case study evidence (Yin, 2009)—represent the primary source of data in this thesis. A total of 46 interviews were conducted during the research period between 2008 and 2014 (Table 6). In addition, in Paper 2, we accessed raw data from 15 interviews conducted in 2007. These interviews were conducted by colleagues and used in an independent report that explored oil and gas-related developments.

As illustrated in Table 6, interview data were collected from three groups of informants. The first group—firm representatives—comprised individuals holding senior positions in their respective firms, including CEOs, CFOs, middle managers, project executives, and market managers. The majority of these individuals had worked in their respective firms for several years, and some were founders or part of the founding team. The decision to include informants holding such senior positions rested on the probability that they possessed extensive knowledge about the firm’s history and current state and possibly about the firm’s future strategies. Public officials were included because of their knowledge about the structural developments occurring at the regional level. For example, I acquired insights about the role of the case region’s public authority in facilitating infrastructure critical for firm development. This information was of particular importance in the development of Papers 1 and 2. Sector experts refer to individuals possessing specialised knowledge

⁶ Because some individuals were interviewed twice or more, the number of informants was 38.

about the oil and gas industry. Typically, such individuals would be consultants or specialists with years of experience in the oil and gas industry. Sector experts were included because they operated independently in terms of private or public affiliation, thus providing accounts that were more subjective. Their lack of affiliation became evident particularly through their criticism of firms and public officials who appeared reluctant regarding change.

The interviews conducted in 2008 and 2009 used a narrative approach (Czarniawska, 1998), in which I asked the informants to provide chronological accounts addressing the gradual realisation of the large-scale oil and gas project. A second part of these interviews included a semistructured approach, in which I used an interview guide to structure the interviews based on constructs identified in the literature review. From 2010 to 2014, as the focus of the research narrowed, the interviews followed a semistructured interview guide based on the different papers' theoretical focus and thematic aim. In general, the interview guide consisted of open-ended questions that allowed the informants the opportunity to speak freely about particular real-life events. Independent of the type of informant, the interviews were conducted mainly at the location of the informants' workplace. The 46 interviews lasted, on average, 45 minutes (ranging from 12 minutes to close to two hours).

In addition to interviews as a primary source of data, I used a number of secondary sources (Yin, 2009). For example, news articles, web pages, and press releases proved valuable for the verification of factual statements acquired in the interviews. I also used Statistics Norway⁷ as a source for acquiring statistical data about how the study regions' various demographic variables changed over time. By participating in industry seminars and conferences, I was able to acquire lists of participants that

⁷ Statistics Norway: www.ssb.no

helped me identify potential informants. In general, secondary data were used to supplement the primary data. However, in Paper 1, I used recently published reports to provide background material for the context description.

A final aspect about the data collection process refers to the incorporation and acquisition of less formalised forms of data. For example, I attended several conferences and seminars held in the region under study, all of which addressed different aspects of oil and gas developments. Furthermore, I was granted admission in an extraregional network comprising a number of firms that aimed to enter the oil and gas supply industry. By attending network meetings, I was able to participate in discussions and observe the interactions among the firms. In this arena, I also established social relations with a number of individuals who would later assist in the data collection process. Finally, while participating in the network, I was frequently asked to hold presentations about the development of my project or about aspects of potential relevance to the firms in the network. These presentations often led to fruitful discussions and thereby increased the legitimacy of my project among firms in the region.

The rationale behind the choice of interview data rests on the explorative nature of the thesis, its research questions, and the aim to build/extend theory (Eisenhardt and Graebner, 2007). Furthermore, the purposeful selection of informants—who were highly knowledgeable and from different hierarchical levels—facilitated the opportunity to view the studied phenomena from different angles (Eisenhardt and Graebner, 2007).

3.3.2 Data analysis

Analysing qualitative data is considered the most difficult stage of developing case studies, and critics have raised a number of questions regarding qualitative data

analysis. For example, how do researchers cope with the extensive amount of written transcripts? Moreover, on what basis do researchers interpret their data and reach conclusions? The overall data analysis of this thesis followed the process of induction, through which I tried to identify emerging concepts and themes in the interview transcripts (Denzin and Lincoln, 1994; Thomas, 2006). This process initially involved a thorough within-case analysis, where I explored interview transcripts in detail (Yin, 1981; Eisenhardt, 1989; Yin, 2009). While reviewing the transcripts, I established a number of first-order categories and coded them in the NVivo software. This process led to a substantial reduction in the data, as only what was deemed important was retained for further analysis (Eisenhardt, 1989). Over time, I identified new patterns and construct relationships, and I developed a more holistic understanding of the contents of the data. Consequently, I frequently discarded or redesignated first-order categories and then reread the transcripts. This process was used for each case; thus, the designation, content, and number of first-order categories varied according to the particular themes addressed in each paper. After I had established the first-order categories addressing the cases in each paper, I reviewed the NVivo codes once more to strengthen the link between the data and the relevant theoretical concepts. This process involved searching for patterns across each category, merging or reframing categories, and developing emerging theoretical constructs. The within-case analysis also included the development of timelines, illustrating how key constructs emerged and/or developed during the data collection process. Finally, as the data were reduced, the emerging constructs developed.

The within-case analysis increased my understanding of both the uniqueness of each individual case (Ayres et al., 2003) and the factors characterising the overall context of the study. My increased familiarity with the data and understanding about the cases also functioned as preparation for the subsequent cross-case analysis. In

general, cross-case analysis aims to identify commonalities among several cases, thereby enhancing generalisability or transferability to other contexts (Yin, 2009; Miles et al., 2014). In such an analysis, generalisability is not to be interpreted as a quantitative measure of representativeness. Rather, the ability to illustrate variations across several cases simply reduces the idea that findings are characterised by full idiosyncrasy. To develop more sophisticated interpretations and explanations, I followed Eisenhardt's (1989) logic of searching for similarities and differences across cases, in line with the categories generated in the within-case analysis. During this stage, I further developed the NVivo categories by more explicitly linking their construct to related theoretical concepts. Two outcomes followed: First, by merging and reducing the number of categories into more precise constructs, I was able to identify more clearly specific patterns across the cases. Second, by establishing fewer and more precise data categories, I was able to generate findings that could contribute to theory building.

The above discussion is not to be understood as a linear process. As with most qualitative techniques, the analysis was performed in parallel with continuous data collection and theoretical deepening (Baxter and Jack, 2008). Furthermore, because of the different nature of the individual papers, the data analysis was not uniform throughout. Papers 2 and 3 were developed as traditional multiple-case studies; thus, the logic of data analysis presented above was followed. Paper 1 and, in particular, Paper 4 were designed as single-case studies. However, because of their exploratory nature and, consequently, the number of variables included, these papers also followed the reasoning presented above.

3.3.3 Quality measures of qualitative case studies

Case study research has been subject to critique, particularly from researchers belonging to the natural sciences. In parallel with these disputes, a growing number

of advocates have mobilised a resistance to disprove the critiques. Gerring (2004, p. 341), for example, states, '*Much of what we know about the empirical world is drawn from case studies*'. To assure the quality of the thesis, I explain my research conduct in terms of four well-established criteria: credibility, transferability, dependability, and confirmability (Lincoln and Guba, 1985; Miles et al., 2014).

Credibility refers to the need for researchers not only to illustrate how significant patterns are identified in the data but also to clarify what factors affect this identification (Riege, 2003). To strengthen the credibility of my research, I have emphasised the use of thick descriptions by providing explanations about the contexts of the empirical studies (Creswell and Miller, 2000). Such descriptions improve the ability of the reader to relate to the accounts and findings. A further measure involved conducting parts of the research process in collaboration with fellow researchers. In particular, this measure was used in the co-authored development of Papers 2 and 4. For example, in Paper 2, the first stage of the analysis process (i.e., the within-case analysis) was conducted as a joint effort, allowing for discussions regarding the interpretation of data and the establishment of initial links to theory.

Transferability concerns the aim of reaching analytical generalisation, referred to as the ability of researchers to find similar or different findings among informants or across organisations (Riege, 2003). To address this issue, I emphasised the comparison of case evidence with existing literature in order to address contributions and generalise within the defined study contexts (Yin, 2009). Furthermore, the case selection followed a logic of exploring similar cases within a specific context (Eisenhardt, 1989). The use of such a logic further strengthened the contextual specificity while still achieving variation across the cases.

Dependability refers to consistency in the research process (Riege, 2003). Several techniques were used to address this issue. For example, I recorded all interviews followed by verbatim transcription to avoid personal interpretations in the raw data. I also used NVivo as a database for organising and documenting the vast amount of data (Lincoln and Guba, 1985). Furthermore, apart from the earliest stages of the data collection, I used semistructured interview guides as a method for obtaining consistency in the data for each specific paper (Yin, 2009).

Confirmability addresses whether the researcher interprets data in a logical and unprejudiced manner (Riege, 2003). To limit potential bias, I relied on a variety of data sources to illustrate concurrency (or contradiction) in the informants' claims (Patton, 2002). The different data sources were also triangulated to further strengthen my claims (Silverman, 1993; Dingwall, 1997). Furthermore, I emphasised the extensive use of empirical quotations to exemplify and illustrate the view of the informants. Finally, I returned all transcripts to the informants for review. Of the 46 interviews, five informants demanded that parts of the transcript's contents be discarded owing to sensitivity. Such a request may indicate that the interview settings were characterised by oral openness.

As a final way of strengthening the validity of the data, and consequently my arguments, I expanded the timeframe of the fieldwork (Creswell and Miller, 2000). Over the years, as an increasing number of informants were interviewed, my understanding about the context and complex structures was deepened in terms of specificity and scope. In general, I have strived to provide thorough accounts of the basis for all of the different aspects underlying my choices and arguments throughout all facets of the research process.

3.4 Ethical considerations

Empirical research involves the collection and use of data provided by individuals, either anonymously via, e.g., questionnaires or through personal interviews; thus, the researcher holds great responsibility. For example, the researcher has the ability to use and present the data independently of those who provided the data. The contents of this thesis are based on interview data provided by a number of individuals who represent firms, institutions, public bodies, and so forth. All informants are anonymised with the exception of those interviewed for paper number four.

When I approached the informants, I followed a common procedure, which involved a number of means to establish trust and credibility. After I had explained the objectives of my research and the intended use of the collected data, I noted that my aim was to have an open discussion about the theme of interest. To achieve an open discussion, I first explained to all informants⁸ their right to, at any time during the interview, specify that certain information should be kept off the record. Second, I offered all informants the opportunity to review the interview transcripts and thereby to add or remove information. In this way, I established my emphasis on the informant's ability to speak freely without being concerned about the potential misuse of sensitive information. After the interviews were recorded, the audio files were transcribed by myself or my research colleagues.

The analytical interpretations and use of the data have been conducted to the best of my ability. In general, I believe that I have developed the thesis while complying with the required ethical standards.

⁸ With the exception of those interviewed in 2007 (used in paper number two)

4. Empirical studies

4.1 Overview

Four individual papers are included in this thesis. Two were developed with me as the sole author, and two were developed with me as the main author. The four papers were developed at different levels of analysis (micro/macro), collectively representing a multilevel approach to the regional development process. Currently, paper 1 and 2 are published in *European Planning Studies* edited by Philip Cooke and Louis Albrechts. Paper 3 is under revision for resubmission in the 2014 RENT Anthology, and paper 4 was submitted to the *International Small Business Journal* on April 6th, 2015. The following chapters summarise the four papers included in the thesis, and Table 7 presents the main characteristics of each paper.

Table 7: Overview of the individual empirical papers

Title	Co-author	RQ	Research question(s)	Theoretical platform	Data set	Key findings	Publication status
#1 <i>The Effects of Exogenous Shocks on the Development of Regional Innovation Systems</i>	-	1	<i>How can exogenous shocks stimulate the emergence of regional innovation systems?</i>	RIS Path-dependency	Interviews (55) Secondary data	Exogenous shocks can dissolve path dependency by mitigating organisational thinness, fragmentation, and lock-in, thereby stimulating path creation processes. The analysis provides a holistic understanding of regional development processes. The analysis illustrates RIS emergence in a peripheral region.	Presented at the DRUID conference in Copenhagen. Denmark, June 16-18, 2014 Published in <i>European Planning Studies</i> (forthcoming). DOI: 10.1080/09654313.2015.1038221
#2 <i>Small Businesses Need Strong Mediators: Mitigating the Disadvantages of Peripheral Localisation through Alliance Formation</i>	Henriksen, J. T.	1&2	1) <i>In what way can large oil and gas companies facilitate the formation of regional networks and strategic alliances?</i> 2) <i>How can large-scale oil and gas projects and strategic alliances foster regional cluster formation?</i>	Cluster theory Strategic alliances	Interviews (54)	The paper shows the importance of formality in strategic alliance governance. Large actors have powerful roles when entering peripheral regions: - facilitating relationships between regional and external actors - stimulating firm establishment	Presented at the RENT XXVI conference in Lyon, France. November 21-23, 2012 Published in <i>European Planning Studies</i> (2015) 23(3), pp. 529-549
#3 <i>Overcoming the 'Smallness Challenge' in Asymmetrical Alliances</i>	-	2	<i>How can small firms address the 'smallness challenge' in large-partner alliances?</i>	Strategic alliances Proximity	Interviews (7)	Nonspatial dimensions of proximity can mitigate the 'smallness challenge' in asymmetrical alliances. Nonspatial proximity may compensate for a lack of geographical proximity. The roles of different proximity dimensions vary according to small firms' positions in the alliance cycle.	Presented at the RENT XXVII conference in Luxembourg. November 19-21, 2014 Under revision for resubmission in the 2014 RENT Anthology (Edward Elgar) after being considered one of the 24 best papers at the 2014 RENT Conference
#4 <i>The Pain and Gain of Orchestrating Growth through Strategic Alliances</i>	Sørheim, R.	3	1) <i>How can an entrepreneurial firm accumulate and structure initial resources to prepare a new market entry?</i> 2) <i>How can initial resources be cooperatively bundled and leveraged through a strategic alliance?</i>	Resource orchestr. Strategic alliances Firm growth	Interviews (39)	The resource orchestration process changes over time as projects evolve through their lifecycles. Small firms should develop their internal resources prior to entering into alliances. The paper addresses why and how firms grow.	Submitted to the International Small Business Journal (April 6 th)

4.2 Paper 1: The Effects of Exogenous Shocks on the Development of Regional Innovation Systems

4.2.1 Introduction and research question

This paper examines how an exogenous shock reduced organisational thinness, fragmentation, and lock-in among regional stakeholders and thereby facilitated path creation and RIS emergence in a peripheral region. The paper draws on previous studies related to the evolutionary aspects of RISs and aims to contribute to the literature by providing a holistic understanding of the complex mechanisms that underlie regional transformation. The paper was developed based on longitudinal data collection during the period between 2008 and 2012. This lengthy data collection period provided the opportunity to follow a regional transformation process over time. The following research question is explored through a multilevel analysis: *How can exogenous shocks stimulate the emergence of RISs?*

4.2.2 Theoretical framework

Despite the absence of a universal model (Doloreux and Parto, 2005), scholars have proposed that RISs consist of four basic elements: firms, institutions, knowledge infrastructure, and innovation-driven policies (Doloreux, 2002). Further, the actors in RISs are characterised by close relationships that facilitate interactive learning, knowledge production, and social embeddedness (Doloreux, 2002), often based on a specialised and concentrated type of knowledge (Andersson and Karlsson, 2006).

The RIS concept has mainly been studied in core regions characterised by knowledge-intensive industrial sectors in which firms possess well-developed innovative capabilities (Doloreux and Dionne, 2008). Some scholars have attempted to address this issue by proposing that suboptimal RIS also exist (e.g. Isaksen, 2001; Tödtling and Trippel, 2005; Doloreux and Dionne, 2008). This paper explores how an exogenous

shock affected three particular variables of path dependency in a peripheral region: organisational thinness, which refers to a scarcity of relevant actors (key organisations, firms, and institutions) possessing resources that can facilitate innovation activities (Tödtling and Trippl, 2005); fragmentation, which refers to a situation in which relevant firms exist but do not interact (Kaufmann and Wagner, 2005); and (negative) lock-in, which refers to a situation in which sequential patterns of activity and behaviour form a fixed trajectory—a trajectory that becomes costly and difficult for actors (e.g., firms, organisations, support institutions) to break free from (Setterfield, 1997).

4.2.3 Methodological approach

A longitudinal case study approach was chosen because of the need for further empirical insight into RISs in peripheral regions. I investigate a small coastal municipality in northern Norway to illustrate how an exogenous shock facilitated regional development and institutional restructuring. The rationale for selecting the particular region is its major transformation from a state of stagnation and decline to a state of prosperity and expansion owing to increased oil and gas activity in the region.

The primary data were collected from 39 semistructured interviews conducted between 2008 and 2012 with firm representatives, public officials, and sector experts. The secondary data mainly consist of reports that were published by Norwegian research institutions based on quantitative and qualitative data related to petroleum industry developments in Norway. In addition, statistical data from the national statistics bureau (Statistics Norway) were used for demographical insight.

4.2.4 Findings

The findings show that the entry of the oil company (i.e., the exogenous shock) reduced organisational thinness by attracting external firms to the region. The existing regional actors then managed to reduce their organisational lock-in by adapting their existing skills and resource bases by using new knowledge provided through interfirm relationships (reduced fragmentation). The reduced organisational lock-in and fragmentation ultimately strengthened the institutional structure and further contributed to the creation of a regional path. An emerging RIS was observed in the wake of the transformation from path dependency to path creation.

Furthermore, the findings illustrate that despite the potential for introversion and the different types of path dependencies arising from a common language, culture, and territorial identity in peripheral regions, deeply rooted traditions may also represent a favourable basis for restructuring and path creation. If regional actors are able to utilise existing skills and resources from existing industries to adapt to new industries, regional transformation can occur. Such processes, however, are likely to depend on the presence of a critical mass of firms and institutions as well as the interconnections between them.

4.2.5 Contribution to the thesis

This paper addresses the first research question of the thesis by exploring how an exogenous shock stimulated regional transformation and RIS emergence. The approach and findings aim to advance the existing literature by illustrating that RISs (albeit suboptimal) may also exist in regions that differ from the likes of Silicon Valley. A notable contribution is the multilevel analysis, which enhances existing knowledge by illustrating how the studied exogenous shock also facilitated change at the public authority and macro (regional) levels. The analysis accordingly provides a holistic

understanding of the complex mechanisms that underlie regional transformation. The empirical findings therefore suggest that the strength of a region likely depends on the collective efforts of, and relations between, actors represented at different levels and disciplines in the business environment.

4.3 Paper 2: Small Businesses Need Strong Mediators - Mitigating the Disadvantages of Peripheral Localisation through Alliance Formation

4.3.1 Introduction and research question

This paper investigates how small entrepreneurial firms in two peripheral regions developed by entering the oil and gas industry. The paper draws on previous studies related to the establishment of strategic alliances and emerging clusters and contributes to these research streams by examining the disadvantages of peripheral localisation and small firm size. A central theme concerns how large-scale petroleum projects affect regional industry by facilitating interfirm collaboration, which, in turn, can foster emerging cluster structures. We study two newly formed strategic alliances and the processes through which they actively attempt to establish networks with actors in national industry clusters. The following research questions guide the empirical investigation: 1) *In what way can large oil and gas companies facilitate the formation of regional networks and strategic alliances?* 2) *How can large-scale oil and gas projects and strategic alliances foster regional cluster formation?*

4.3.2 Theoretical framework

The theoretical framework is based on the cluster approach (Porter, 1990). Existing research on clusters has illustrated that clustered firms often possess superior competitiveness and performance than firms situated outside clusters (e.g. Lechner and Leyronas, 2012). The literature, however, lacks studies exploring cluster structures in weak or less-developed regions (Tödtling and Trippl, 2004). The concept of peripheral localisation is often associated with negative descriptions based on

distance from a core (Anderson, 2000), low levels of R&D and innovation because of the dominance of SMEs in traditional industries, the absence of specialised clusters, and the lack of connections to knowledge providers and support institutions (Tödtling and Trippl, 2005). This paper thus draws on the firm network and strategic alliance literature to explore the role of interfirm collaboration as a means to overcome peripheral localisation. Firm networks and strategic alliances have been shown to facilitate access to knowledge, resources, skills, and legitimacy (Gulati, 1998) and thereby to mitigate barriers related to remoteness (Gulati, 1998; Alvarez and Barney, 2001; Yang et al., 2014).

4.3.3 Methodological approach

The paper adopts a longitudinal case study approach. The results are based on 54 formal interviews (conducted between 2007 and 2012) that focused on local industrial development related to the introduction of large-scale petroleum projects. All of the interviews were transcribed verbatim and analysed by using the Nvivo coding software. In the coding process, we followed the basic rule for the constant comparative method (Glaser and Strauss, 1967) to find variations across the two cases.

4.3.4 Findings

The findings illustrate that oil companies can moderate local firms' disadvantages from peripheral localisation by actively facilitating relationships with established national firms. By facilitating such relationships and maintaining an active moderating role, oil companies can foster strategic alliances and emerging cluster structures. In this study, the oil company had a decisive role in one of the two cases on two dimensions: its role as intermediary between local firms and national firms and its role in fostering the development of an emerging cluster structure by stimulating the

establishment of new firms through the oil and gas project. In the second case, the oil company was unable to facilitate regional development. In addition, the findings show that establishing alliances with large firms allows small firms to obtain the highest value in terms of accessing resources, knowledge, and new markets. Finally, the findings indicate that if regional firms are to successfully establish forms of alliances or networks, their cooperation must be based on formalised agreements.

4.3.5 Contribution to the thesis

This paper mainly contributes to the first and second research questions of the thesis. First, the findings illustrate that cluster emergence is likely to be influenced by the potentially powerful role of large firms that enter peripheral regions. In peripheral regions, the presence of such actors can facilitate external linkages that contribute to knowledge and learning, thus mitigating the disadvantages of small firm size, remoteness, and a lack of legitimacy for peripherally located firms. Such linkages and the establishment of external firms provide favourable conditions for cluster formation in areas that are incapable of independently doing so because of their weak institutional structures and weakly developed industrial specialisation. As the phenomenon of cluster emergence remains theoretically and empirically underexplored in the literature, this paper provides valuable insights from a unique context.

Regarding the second research question, the findings clearly indicate that large firms have the potential to successfully facilitate interfirm collaboration among regional firms and among regional and extraregional firms. This finding is likely to reside in large firms' knowledge about the effectiveness of interfirm collaboration and in their authority over small and inexperienced firms in peripheral regions.

4.4 Paper 3: Overcoming the ‘Smallness Challenge’ in Asymmetrical Alliances

4.4.1 Introduction and research question

This paper explores how geographical, organisational, and technological proximity can mitigate the potential disadvantages faced by small firms that form alliances with large partners. I study five size-asymmetrical vertical alliances in the Norwegian oil and gas supply industry to provide novel insight into the underexplored field of small firm-large firm alliances (Yang et al., 2014). The following research question is thus proposed to address this issue: *How can small firms address the ‘smallness challenge’ in large-partner alliances?*

4.4.2 Theoretical framework

Strategic alliances have become a central component of many firms’ growth strategies (Kale and Singh, 2009). However, while the number of strategic alliances is increasing, failure rates range between 50% and 70% (Hughes and Weiss, 2007; Chao, 2011). This paper builds on the notion that small firms often face situations where the large firm controls the alliance’s activities by engaging in opportunistic behaviour, which inhibits cooperation between the large and small firm and even jeopardises the survival of the alliance (Stuart, 1998; Alvarez and Barney, 2001; Vandaie and Zaheer, 2014). Moreover, increasingly, the resources and knowledge critical to a firm’s development and prosperity are beyond the reach of small firms; thus, small firms in particular may extract value from alliances (Van-Gils and Swart, 2009).

I focus on geographical, organisational, and technological proximity to shed light on size-asymmetrical alliances. Previous studies have provided diverging insights into the effects of geographical proximity on interfirm collaboration, i.e., the ‘proximity paradox’ (Boschma and Frenken, 2010). Some studies have suggested that this type of proximity facilitates interaction and the exchange of knowledge and information

between actors (Torre and Gilly, 2000; Letaifa and Rabeau, 2013), whereas others have found that geographical distance may accelerate entrepreneurship and innovation and that co-location may hamper the development of nonspatial forms of proximity (Broekel and Boschma, 2012; Letaifa and Rabeau, 2013). In this paper, organisational proximity is considered to include the characteristics of functional (or dysfunctional) organisational relationships, e.g., social and cognitive proximity. Organisational proximity has been shown to affect the ability of collaborating firms to achieve learning and innovation based on a shared understanding and language (Kirat and Lung, 1999; Meister and Werker, 2004). Technological proximity relates to the sharing of technological experience and knowledge bases among collaborating firms (Lane and Lubatkin, 1998; Knobens and Oerlemans, 2006) and the degree of heterogeneity in the collaborators' competencies and capabilities (Schamp et al., 2004; Boschma, 2005b).

4.4.3 Methodological approach

A case study approach was employed because the research aimed to understand interfirm dynamics and processes, which are facets that are difficult (if not impossible) to capture by using quantitative techniques. The units of analysis were small firms and their respective positions in various dyads. Data were collected from 11 interviews and were complemented by a number of secondary data sources, including websites, press releases, and other relevant documentation provided by the informants. Because of the small size of the subject firms, the interviews were conducted with top and middle managers (e.g., founders, CEOs, and project managers). These individuals were deemed appropriate because they were able to also provide detailed accounts of relevant events prior to the data collection period. A cross-case analysis of the five alliances was performed to obtain a holistic view of the development of the cases.

4.4.4 Findings

The findings show that several variations in asymmetry and proximity dynamics exist across the cases; however, the 'smallness challenge' was observed, to different degrees, across all cases. Moreover, the findings illustrate that because of differences among the small firms in terms of industry experience, network embeddedness, and knowledge bases, the alliance partners possessed varying degrees of proximity with each other.

The findings suggest that geographical proximity is not an essential component of a strategic alliance as long as the alliance possesses or develops other, nonspatial forms of proximity. This observation relates to recent studies that propose that proximity dimensions may overlap with and substitute for one another (Mattes, 2012; Capaldo and Petruzzelli, 2014; Hansen, 2014b). Organisational proximity emerged as a crucial determinant in the establishment and operational phases of the alliances across all five cases. Notably, this type of proximity affected the small firms' ability to communicate with and learn from their large partner. The findings concerning organisational proximity demonstrate that this proximity dimension represents a critical element of interfirm relationships. One explanation for this finding may be that organisational processes originate from fundamental human behaviour, namely, the ability to interact and exchange ideas based on common knowledge platforms and social ties. Finally, the findings illustrate that alliances with a high degree of technological proximity are the least prone to opportunistic behaviour by the large partner. More specifically, for the small firms in this study, possessing complex and valuable technologies and assets facilitated mutual interdependence between the alliance partners. This finding is in line with several recent publications (Gulati and Sytch, 2007; Bosse and Alvarez, 2010; Villanueva et al., 2012).

4.4.5 Contribution to the thesis

This paper specifically addresses the second research question of the thesis by employing a proximity lens to explore the dynamics in five size-asymmetrical alliances. In particular, the findings indicate that the nonspatial dimensions of proximity can mitigate the ‘smallness challenge’ in asymmetrical alliances. Moreover, the findings illustrate how the roles of different proximity dimensions vary according to small firms’ positions in their respective alliance cycles. For example, in this study, some small firms managed to establish solid positions in their respective alliances over time through the development of nonspatial proximity dimensions. As a result, the importance of geographical proximity was substantially reduced or even eliminated. Conversely, small firms that lacked organisational and technological proximity led the alliances in the direction of transaction-based customer-supplier relationships, independently of their level of geographical proximity to the large partner. The overall insights of this paper may contribute to the recently burgeoning literature focusing on the competitiveness of firms situated distant from markets and partners.

4.5 Paper 4: The Pain and Gain of Orchestrating Growth through Strategic Alliances

4.5.1 Introduction and research question

This paper explores how the management of an entrepreneurial firm structured and accumulated its internal resources in an initial phase, while bundling external resources through a strategic alliance in the growth phase of a venture development. The paper draws on key elements from resource-based theory and the strategic alliance and growth literature. The aim is to provide insights about the complex and longitudinal process through which small entrepreneurial firms position themselves and enter into strategic alliances and about the process through which small

entrepreneurial firms achieve growth from external resource acquisition through alliance partners. The following research questions guide the empirical investigation: 1) *How can an entrepreneurial firm accumulate and structure initial resources to prepare a new market entry?* 2) *How can initial resources be cooperatively bundled and leveraged through a strategic alliance?*

4.5.2 Theoretical framework

The resource-based view (RBV) of the firm has shown that firms can develop sustained competitive advantage based on the resources it possesses (Barney, 1991). However, RBV has been criticised for having little prescriptive power because it simply states the existence and characteristics of resources. What firms do with their resources is as important as what resources they actually possess (Hansen et al., 2004). Furthermore, due to resource constraints, an entrepreneurial venture will normally not have access to or control of the resources needed to attain growth, (Brush et al., 2001). Studies have shown that the accessibility of resources and the ability to develop capabilities is premised on the ability of entrepreneurs to orchestrate resources through the lifecycle of the firm (Lichtenstein and Brush, 2001; Sirmon et al., 2011). First, entrepreneurs need to structure their internal resources, which include subprocesses, such as the acquisition and divestment of resources (Speckbacher et al., 2014), and as the firms grow, the resources need to develop further through a process of resource bundling (Sirmon et al., 2011).

Strategic alliances are mentioned as a form of hybrid growth (McKelvie and Wiklund, 2010) and can be considered a cooperative arrangement that is characterised by the process of acquiring missing resources (BarNir and Smith, 2002; Das and Teng, 2002). If a firm facing resource scarcities is able to form an alliance in which the partner possesses complementary resources, growth can, in fact, be attained more quickly

and less expensively by leveraging the other's resource base (McKelvie and Wiklund, 2010).

Insight from the literature illustrates that entrepreneurial firms, when entering a new market, should focus on accumulating a resource base that is sufficient for entering into dialogue with the main market players in the field. This focus involves dedicated and focused resource orchestration to build capabilities that can be used in resource bundling processes with potential strategic partners. This paper focuses on how resources can be orchestrated through a hybrid growth mode, such as a strategic alliance, and how such an alliance could potentially enrich a resource base.

4.5.3 Methodological approach

A longitudinal single case study design was applied because the study aimed to acquire rich descriptions about the phenomenon of resource orchestration, the strategic alliance formation process, and consequent growth patterns. Extensive data collection was conducted over a five-year period, where initial contextual data and detailed data from interviews with key personnel in the case firm were collected. Overall, the data set comprised data from 39 in-depth interviews. The data analysis included several rounds of triangulation, with the aim of providing an evolutionary presentation of how the case firm developed from its initial positioning to joint operations with the alliance partner.

4.5.4 Findings

The findings illustrate how the case firm's existing resource base was insufficient to allow the firm to enter new business areas. Furthermore, local and regional social networks were unable to provide the firm with the necessary knowledge and information. As a response to these barriers, the case firm initiated a process of initiating and accumulating its internal resources, including extensive investments, as

a means to position itself in relation to new market demands and potential alliance partners. Second, the case firm operationalised the strengthened internal resource base by entering into a strategic alliance with a large powerful partner. The alliance relationship facilitated entry into a new market and access to missing resources, thus triggered a hybrid growth pattern in the case firm. As the alliance relationship developed, the case firm needed to devote extensive energy into the management of the alliance. As a result of the strengthened relationship, the case firm achieved the opportunity to develop valuable external resource bundles with the partner.

4.5.5 Contribution to the thesis

This paper addresses the third research question of the thesis by providing in-depth insights into the complex processes surrounding resource orchestration and alliance formation as a means to achieve growth in a new market. As its main contribution, the paper provides novel insights into how an entrepreneurial firm can orchestrate its resources to take a position in a new resource-demanding market. A major element in the process of entering this new business area was the process of entering into and gaining from a strategic partnership with one of the key players in the industry. The empirical findings strongly suggest that orchestrating resources for an entrepreneurial firm trying to enter a new market is a highly dynamic process. Specifically, managers need to emphasise the accumulation and development of an internal resource base that fits with the requirements of the new market. Furthermore, the findings indicate that managers should be able to identify the timing for when to seek out external partners that can provide the resources that are difficult or too costly to develop internally.

Furthermore, this study has shown that small firms depend on possessing a resource base that is valued by large partners to increase the potential for collective resource bundling. Thus, if the interdependence between the partners is too low, the

incentives for engaging in novel collaboration may suffer. Also, if a small entrepreneurial firm is unable to develop its resource base to reach a sufficient fit with the large partner, the findings show that value can be extracted even if the alliance does not function optimally. Notably, the alliance may represent access to new markets that open up the opportunity for small firms to utilise investments from earlier stages in the market entry process.

5. Conclusions and implications

In the following chapter, I first summarise the main findings according to the research questions of the thesis and then introduce a multilevel conceptual model of the regional development process. Second, I present the theoretical contributions and discuss how I address the theoretical gaps outlined in Chapter 2.4. Third, I discuss the implications of the findings for practitioners before I, finally, elaborate on the limitations of the thesis and present suggestions for further research.

5.1 Findings and theoretical development

The application of well-developed theoretical frameworks does not fully account for the idiosyncratic nature of regions, nor does the traditional scholarly approach sufficiently explore the mechanisms that affect the path trajectories of regions. Therefore, this thesis aims to provide insights into and extend theory about the complex and multifaceted nature of regional development. I argue that a multilevel analysis—including firms, institutions, public actors, and systemic structures (e.g., clusters and RISs)—is needed to capture the holistic nature of regional development processes (Forbes and Kirsch, 2011). Therefore, the overall research question of the thesis is as follows: *How can an exogenous shock stimulate development processes at the micro and macro levels in peripheral regions, and what are the mechanisms that facilitate this development?* To explore this question, the thesis builds upon four empirical papers that employ different but related theoretical perspectives. Each

paper explores different mechanisms and interdependencies that encompass regional development as stimulated by oil and gas developments. Moreover, the empirical papers illustrate the complexity and interconnectedness that exist between the different actors involved in these processes.

Based on the theoretical discussions and the findings from the individual empirical papers, I propose a multilevel conceptual model that captures the regional development process. The conceptual model comprises three main stages that involve mechanisms at the firm (1) and interfirm (2 and 3) levels, with these three stages representing three strategic actions that constitute the firm-level development process: positioning (1), mobilisation (2), and operationalisation (3). Finally, I propose that the accumulated effects of these firm-level mechanisms may represent the means for the development of clusters and RISs in peripheral regions. The overall objective of the conceptual model is thus to illustrate the different firm-level processes that occur when firms exploit new business opportunities, the interconnections between these processes, and finally, how these processes affect development at the regional level. In the next three sections, I first present the findings according to each stage in the conceptual model. Then, in the fourth section, I present the complete model, which illustrates how the three stages at the firm level collectively stimulate development at the macro level.

5.1.1 Positioning towards new market opportunities

The first stage of the conceptual model (Figure 4) refers to how a firm position itself in relation to new customer demands or new market needs (Shane and Venkataraman, 2000; Choi and Shepherd, 2004). The findings from the papers reveal three particular mechanisms that comprise the positioning process: the use of existing network relations, the establishment of new network relations, and the

development of internal resources. All three of these address the first challenge that the peripherally located firms experienced when they confronted the oil and gas industry, namely, a lack of legitimacy, knowledge, and resources related to potential upcoming business opportunities. This stage thus addresses the third research question: *What are the mechanisms that facilitate firm development in peripheral regions?*

First, firms should utilise their existing networks to gather available information about new business opportunities. However, the firms reported that existing (local/regional) networks rarely suffice for the provision of valuable knowledge and information. While local/regional networks failed to provide valuable information, such existing network relations represented value because they could aid in the identification of external relations. Thus, second, firms should seek to expand their networks—in terms of size *and* relational mix (Lechner et al., 2006; Huggins and Johnston, 2010)—to include external ties that may represent more valuable and specific knowledge (Hite and Hesterley, 2001). The findings from the papers indicate

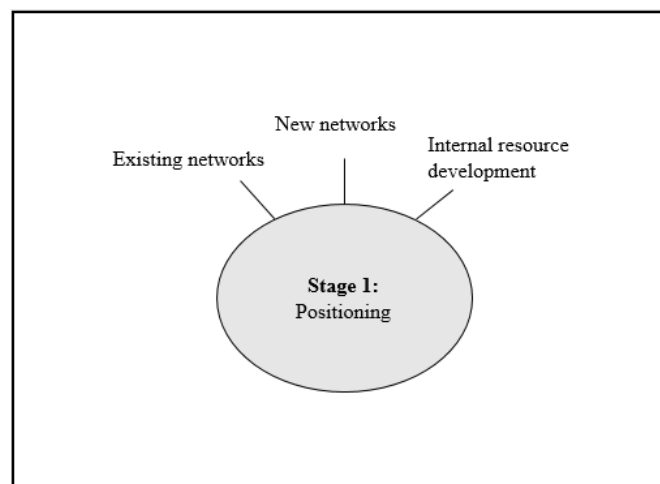


Figure 4: Stage 1 of the multilevel conceptual model

that this mechanism is a critical factor in the initial stages of a firm's process of exploiting a new opportunity. External relations provided peripheral firms with information about the dynamics of the oil and gas industry and, more important, knowledge about the requirements of customers and partners. Furthermore, the findings show that the ability to establish external ties to valuable knowledge providers depends on the dedication of the entrepreneurs and management teams in small firms. In some cases, the peripherally located firm managed to establish trust-based relationships with central individuals in the industry, while in other cases, firms were unable to extend their reach beyond local networks. The findings highlighting the value of external ties were strengthened when I observed the stagnation of those who failed to establish external ties.

When firms possess knowledge about new business opportunities, internal resources should be developed in line with the new set of requirements. For example, the findings highlight the importance of complying with industry standards required by customers and large project operators. For example, the firms that managed to successfully enter the oil and gas industry completed several investments, such as completing formal qualification programmes (e.g., ISO 9001), professionalising and upgrading the firm profile, and investing in physical resources (e.g., machines and equipment). Some firms even acquired other firms to complement or add to their existing resource base. This final mechanism in the positioning process was found to increase firms' legitimacy and thereby facilitate the possibility of interacting more effectively with potential partners (Sirmon et al., 2011). Moreover, the positioning process increased the opportunities for small firms to achieve interdependence with large partners.

5.1.2 Mobilisation of strengthened embeddedness and resource bases

The second stage of the conceptual model refers to how firms mobilise based on the increased network embeddedness and strengthened resource bases developed in the positioning process (Figure 5). Two specific mechanisms are included in the mobilisation process: the establishment of strategic alliances and the acquisition of resources through the strategic alliance. Consequently, the mobilisation process in stage 2 also addresses the third research question: *What are the mechanisms that facilitate firm development in peripheral regions?*

First, the thesis provides several insights related to the process through which peripherally located firms establish alliances. In general, the findings illustrate that the ability to form an alliance will depend on the successful implementation of the mechanisms in the mobilisation process. The findings indicate that while networks and other types of less formalised relations do not directly facilitate transactions between firms, they nevertheless connect individuals to each other and thereby, over time, increase the potential to establish more formalised collaboration (Gulati, 1998).

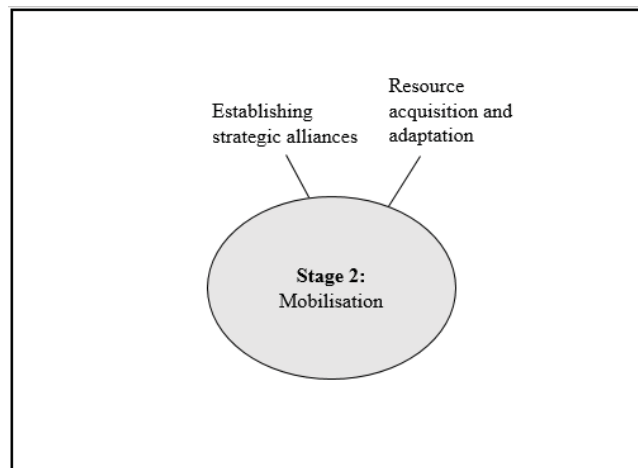


Figure 5: Stage 2 of the multilevel conceptual model

This potential for more formalised collaboration is of particular importance for firms located in peripheral regions, as a lack of geographical proximity to central markets and customers reduces the propensity of firm representatives to meet and exchange information and ideas. Preferably, managers should seek to establish social relationships and legitimacy in the industry before entering into alliances. Furthermore, the findings indicate that peripherally located firms should invest in organisational and material resources to be perceived as potential alliance partners. This finding relates to previous studies showing that becoming an alliance partner depends on what the firm can contribute to a partnership, such as market position, reputation, and financial and technological resources (BarNir and Smith, 2002).

The findings also highlight the potentially crucial role played by oil companies when they enter peripheral regions. Specifically, the findings illustrate that oil companies can moderate peripherally located firms' disadvantages of, e.g., smallness and newness by facilitating relationships with large external firms. In general, the findings indicate that the alliance formation process requires a rather different approach in peripheral regions because of peripheral firms' limited access to alliance partners and lack of alliance capabilities. Finally, while these findings are based on empirical accounts from the context of the oil and gas industry, similar mechanisms may exist in other contexts (regarding geographical location and industrial sectors) where large firms have powerful roles in relation to their suppliers.

Regarding resource acquisition, the findings support previous research showing that the establishment of alliances is often motivated by resource and knowledge needs (Das and Teng, 2000; Harrison et al., 2001; Rothaermel and Boeker, 2008). The findings clearly illustrate that strategic alliances represent a valuable means through which peripherally located firms acquire missing resources and industry-specific

knowledge and thereby gain increased legitimacy that enhances their potential to enter new markets.

The findings also suggest that the role of resources changes over time. As illustrated in the multilevel conceptual model, the firms considered their resources differently depending on their position in the opportunity exploitation process. In the initial stage, peripherally located firms first focused on the development and positioning of existing resources because missing resources were costly to acquire and/or rare, inimitable, and nonsubstitutable (Barney, 1991). Second, when peripherally located firms entered into alliances, the challenge concerned their ability to acquire external resources from their partner. Finally, when peripherally located firms had strengthened their resource bases, they were able to grow through valuable resource orchestration activities. The findings thus show that the challenge facing firms with scarce resource bases shifts from how to develop and acquire missing resources to how to best employ resources to foster a competitive advantage and growth.

5.1.3 Operationalising the alliance relationship

Figure 6 illustrates that stage 3 of the conceptual model includes three mechanisms that come into effect when small firms enter the stage of operationalisation: management of the alliance, development of proximity to the large partner, and resource orchestration through interfirm collaboration. These mechanisms address the second research question of the thesis: *What are the mechanisms that affect interfirm collaboration between small peripheral firms and their larger partner?*

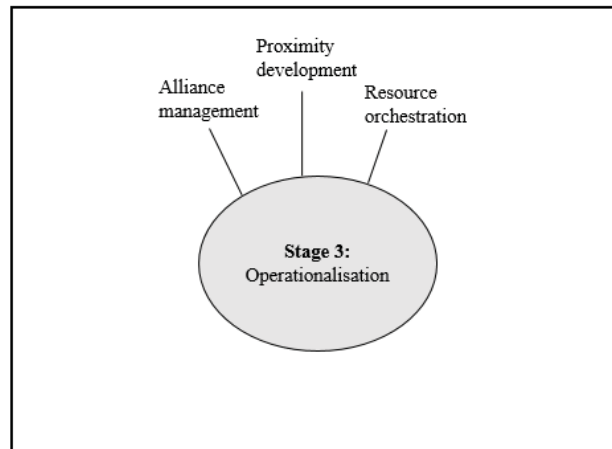


Figure 6: Stage 3 of the multilevel conceptual model

Strategic alliances facilitate the exchange of knowledge and resources. However, firms' ability to successfully benefit from resource acquisition depends on several conditions. Because alliances—asymmetrical ones in particular (Ahuja et al., 2009; Yang et al., 2014)—have been shown to often fail because of friction in the interfirm relationship, small firms must be able to manage the relationship with their large partners. The findings of this thesis suggest that to facilitate this process, firms should develop organisational and technological proximity to their partner (Broekel and Boschma, 2012; Hansen, 2014b). The findings indicate that these nonspatial proximity dimensions constitute a critical mechanism for peripherally located firms' ability to overcome potential opportunistic behaviour by a large partner. Furthermore, geographical proximity was found to be of less importance if small firms managed to develop organisational and technological proximity to their large partner. This finding undermines the importance of co-location (Broekel and Boschma, 2012; Letaifa and Rabeau, 2013) and illustrates that different dimensions of proximity may overlap with and substitute for one another (Mattes, 2012; Capaldo and Petruzzelli, 2014; Hansen, 2014b). Furthermore, the findings suggest that for small firms to develop nonspatial

proximity to large partners, they should increase their embeddedness in national networks to reduce potential knowledge gaps. Only when collaborating firms have attained a sufficient degree of nonspatial proximity does the relationship become sustainable and valuable for all of the involved parties. At this stage, collaborating firms have the ability to orchestrate novel resource combinations.

Partner interdependence refers to a situation where the value and complexity of technologies and assets that firms bring into a dyad are complementary, and in this thesis, partner interdependence was also found to strongly facilitate functional collaboration in alliances. In line with previous research (Gulati and Sytch, 2007; Bosse and Alvarez, 2010; Villanueva et al., 2012), the findings clearly illustrate that peripherally located firms gain increased benefits when the large partner values the resources they bring to the collaboration. In some cases, for example, local knowledge and access to local markets may compensate for a lack of complex products or technologies (Prashantham and Birkinshaw, 2008). In general, the findings strongly suggest that partner interdependence mitigates the effects of small firms' size asymmetry with large partners.

5.1.4 The emergence of clusters and RISs

Finally, the model proposes that the aggregate of the mechanisms in stages 1-3 potentially affects the industrial composition in peripheral regions and thereby stimulates the emergence of clusters and RISs (Figure 7). This proposition addresses the first research question: *What are the exogenous shock mechanisms that stimulate the emergence of clusters and RISs, and how does the emergence of clusters and RISs affect the development of peripheral regions?*

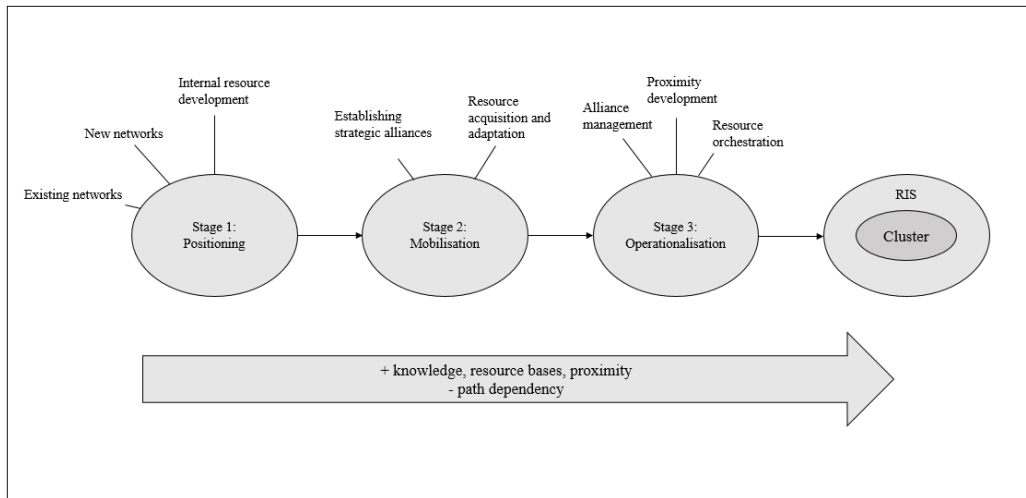


Figure 7: A multilevel conceptual model of the regional development process

As illustrated in previous research, clusters and RISs often exist in the same geographical space (Asheim and Coenen, 2005). In peripheral regions that are characterised by weak institutional structures and fragmented industries, developments at the firm level first have the potential to foster emerging cluster structures (Isaksen, 2001). A central component of this notion is the role of large firms when they enter peripheral regions where existing industries are characterised by fragmentation, organisational thinness, and lock-in. In the context of this thesis, the oil company facilitated a chain of events in the overall regional development process. Notably, it possessed the authority and knowledge needed to orchestrate and mobilise regional actors (Lazerson and Lorenzoni, 1999), facilitate new market opportunities, and function as a role model for other firms (Boari, 2001).

In addition, the findings show that the oil company attracted additional external firms to the region. As regional actors gained increased access to specialised knowledge through external networks (Iammarino, 2005), the sectorial focus narrowed and thereby stimulated path creation processes among regional actors. As this process

continued over time, the institutional structure of the region strengthened because of the emerging clustering. Furthermore, the findings illustrate that in peripheral regions, successful path creation processes likely depend on all actors within the region's institutional structure (i.e., regional firms, institutions, and public bodies) to benefit from collective positioning and mobilisation towards opportunity exploitation. As the different regional actors collectively moved towards the new opportunity represented by the oil and gas industry, they were able to break free from deeply their rooted norms and routines. Such collective mobilisation is suggested to be of particular importance in regions suffering from organisational thinness. The findings show that the increased interaction between regional and external actors led to path creation processes aimed at the exploitation of new opportunities. Notably, the findings demonstrate the ability of existing firms to gradually adapt their existing skills and competencies to meet the needs of other industries (e.g. Boschma, 2007; Schienstock, 2007; Simmie, 2012).

While the effect of individual mechanisms in stimulating cluster and RIS emergence may be identified, each mechanism must also be observed in relation to the others. For instance, the behaviour of large firms has the potential to facilitate change among regional actors, notably by attracting the establishment of other external firms and by establishing relations between regional and external firms. If these relations are established, regional industry may abandon fixed trajectories because of increased knowledge and resource bases and may thereby develop through path creation processes. As the three mechanisms work over time, they may provide grounds for the emergence of clusters and RISs. The findings indicate that the validity of these mechanisms likely depends on idiosyncratic conditions, notably because large firms have varying motives and motivations when they enter peripheral regions. For example, the findings illustrate that the two regions developed along two different

paths as a result of the oil companies' behaviour. In one region, the oil company functioned as a moderator that actively communicated with firms in the region and facilitated contact between the main contractor and the regional firms. Because of these moderating effects, regional firms entered into regional and national alliances that facilitated access into the oil and gas supply industry. In the second case, the oil company had no direct interaction with the firms in the region and did not manage to facilitate development among regional actors. Furthermore, a region's conditions in terms of the existing industrial composition and institutional setup are likely to determine the ability of large firms to stimulate change. I nevertheless believe that the findings provide valuable insights for similar contexts.

As a concluding remark regarding the findings of the thesis, the bottom arrow in Figure 3 illustrates how four firm-level factors are affected in parallel with stages 1 to 3. First, because of firms' strategic behaviour with external networks, a focal firm will experience an increase in their *knowledge base*. This process initiates in stage 1 when firms use their existing network relations to illuminate a new business opportunity. Knowledge acquisition further develops as firms expand the scope and size of their networks to also include formalised collaboration (i.e., strategic alliances). Second, a firm's *resource base* also develops across the stages. The firm's internal resources are initially optimised and supplemented by the resources available to the firm, and the firm then engages in resource acquisition and orchestration through alliances, a process that initiates in stage 2 and continues throughout the period of interfirm collaboration. Third, as firms acquire resources and knowledge through formalised collaboration, they will increase their *opportunity exploitation ability*. Finally, in parallel with the three factors stated above, a focal firm will reduce its *path dependency* through the adaptation of knowledge and resource bases to fit with new market demands.

As illustrated in the model, stages 1-3 are three different but interrelated processes. Furthermore, regional firms' succession through the stages is fostered by the evolving nature of their interfirm relationships. If alliances are established and managed so that they continue to exist, the regional firms will obtain relational capabilities that foster the expansion of their networks and the scope of interfirm collaboration. An important notion behind the conceptual model is that it does not depict a linear process. Rather, the model illustrates a simplified process in which firms develop through different stages and shows how this process may facilitate development at the regional level. Consequently, moving through and beyond stages 1-3 is a dynamic process, and firms are likely to move back and forth between the positioning, mobilisation, and operationalisation stages.

5.2 Theoretical contributions

The longitudinal and multilevel design of this thesis offered the opportunity to 1) follow a real-time regional development process and 2) identify dynamic mechanisms that stimulate development at different levels in a region. The main contribution of this thesis resides in the multilevel conceptual model of the regional development process (Figure 7). The conceptual model builds upon the findings from each empirical paper, as well as theoretical discussions of the literature on clusters, RISs, strategic alliances, and firm resources, which currently suffer from research gaps (Chapter 2.4).

The contributions to the different theoretical perspectives share one commonality, namely, the context of the periphery. In general, existing knowledge about how firms and regions develop has relied on results from locations that differ vastly from the context of this thesis. This thesis illustrates that a peripheral context adds several mechanisms to well-established theoretical concepts. Thus, as a general contribution, the findings show that the theoretical concepts may only be applicable to some

contexts if they are used a particular way. As an example, Cooke and Morgan (1998) states that a strict reading of the current literature indicates that only three regions deserve the status of RIS: Silicon Valley (high-tech), Emilia-Romagna (automotive and agro-food), and Baden-Württemberg (automotive and ICTs). I interpret this statement by Cooke and Morgan as a call for scholars to investigate ordinary regions and not only the 'happy few' (Asheim and Coenen, 2005). In the following sections, I present several theoretical contributions that address the identified research gaps.

5.2.1 The cluster and RIS literature

Regarding clusters and RISs, this thesis provides several novel contributions that address the gaps outlined in Chapter 2.4. The first contributions relates to cluster and RIS emergence. Scholars have proposed several triggers for cluster and RIS formation, such as high rates of firm start-ups (Kenney and Patton, 2006; Dahl et al., 2010) and collaboration between firms and universities, which can stimulate new industries (Brenner, 2005; Scott, 2005). However, peripheral regions often suffer from an absence of such triggers (Tödtling and Trippel, 2005). Rather, peripheral regions are often dominated by SMEs that tend to suffer from liabilities additional to their small size, such as weak resource bases and a lack of technological capabilities (Cooke, 1996). Furthermore, several studies have provided accounts about how new industries emerge and develop, but these studies describe only the events that occur after the industry's infancy, thereby neglecting the very initial processes (e.g. Giarratana, 2004; Rao, 2004; Forbes and Kirsch, 2011). Consequently, the cluster and RIS literature has yet to provide detailed accounts of the processes that occur in the actual moments of their emergence (see Scott, 2005, for an exception). The findings of this thesis highlight the role of large firms as powerful change agents when they enter peripheral regions. Their ability to attract external firms to a region and to stimulate tie formation between peripherally located and external firms increases the

inflow of industry-specific knowledge and resources, thereby initiating opportunity exploitation and path creation processes. The thesis illustrates how the longitudinal effects of these developments at the micro and interorganisational levels are likely to stimulate the development of clusters and RISs (Figure 3). Specifically, the multilevel conceptual model illustrates how regional actors experience three stages that increase sectorial specialisation. When the introduction of external firms adds to the increased specialisation of regional firms, external economies may emerge in the shape of e.g., labour division and rapid interfirm collaboration. Consequently, the findings indicate that exogenous shocks may be of particular significance in peripheral regions because externally driven shocks are likely to limit the liabilities that often characterise such regions.

Overall, the findings illustrate that clusters and RISs may emerge in regions that differ from the typical regions of scholarly interest (e.g., Silicon Valley). However, to study clusters and RIS in peripheral contexts, scholars should employ a less radical view of the traditional features that often characterise these systemic structures: e.g., radical innovation, 'complete' institutional structures, frequent firm start-ups, and specialised and concentrated firms and knowledge providers.

5.2.2 The strategic alliance literature

This thesis contributes to two main aspects of the strategic alliance literature. First, the existing alliance literature suffers from a lack of studies on the dynamics between alliance partners of different sizes (Yang et al., 2014). By building on the proximity framework, I illustrate how small firms can overcome what I term the 'smallness challenge', that is, the potential disadvantages deriving from large firms' opportunistic behaviour, by developing organisational and technological proximity to the large partner. These proximity dimensions are likely to foster partner interdependence and thereby to reduce the chances of alliance failure. This novel

contribution thus illustrates a fruitful theoretical approach for investigating small firm-large firm relationships. The findings also contribute to recent publications that question the significance of geographical proximity (e.g. Broekel and Boschma, 2012; Letaifa and Rabeau, 2013) and that argue that some dimensions of proximity may overlap with and substitute for others (Mattes, 2012; Capaldo and Petruzzelli, 2014; Hansen, 2014b).

A second contribution relates to alliance formation. The strategic alliance literature has proposed several factors that trigger alliance formation, such as knowledge and resource deficits (Eisenhardt and Schoonhoven, 1996), legitimacy needs (Stuart et al., 1999), and transaction cost mechanisms (Hennart, 1988). However, while several studies have examined the reasons *why* alliances are established, scant evidence exists about the process of *how* alliances are established. Consequently, this thesis contributes to the literature by illustrating the complex and time-consuming nature of the alliance formation process. Its particular contribution relates to how firms go through different phases (Figure 3), including positioning in relation to potential partners (network utilisation/extension and internal resource development), mobilisation of the positioning (establishment of strategic alliances and initial resource acquisition), and operationalisation of the collaboration (alliance management, learning, and resource orchestration). The positioning process is likely to represent crucial mechanisms for peripherally located firms, particularly because these firms need to make an effort to even be perceived as potential partners.

5.2.3 The resource-based view

Perhaps the most prominent gap in the RBV literature is the lack of longitudinal studies investigating how different resource dynamics change over time (Maritan and Peteraf, 2011). This thesis contributes to filling this research gap by illustrating how

the role of resources depends on a firm's position in the opportunity exploitation process (Figure 3). Specifically, the findings suggest that the challenge facing peripherally located firms with scarce resource bases shifts from how to acquire missing resources to how to best employ resources to foster a competitive advantage and growth. The latter challenge relates to managers' ability to orchestrate their resources when they enter new markets.

As another contribution, this thesis identifies how small firms can provide value to large-partner alliances because the incentives for entering into an alliance may differ among the firms involved. The findings illustrate that while the small firms in the study lacked the 'operative' resources needed to enter the oil and gas industry, they possessed assets that large firms could not develop internally, such as local knowledge and access to local markets (Prashantham and Birkinshaw, 2008). This finding indicates that each partner in an asymmetrical alliance may procure the full value generated by the collaboration when value is defined and measured differently by each partner (Pérez et al., 2012; 2013).

5.3 Implications for practice

The thesis reports several insights that may prove to be valuable for different types of practitioners, particularly for those operating in the oil and gas industry. In the following chapter, I present the implications for firm managers/entrepreneurs, policymakers at the regional and national level, and large firms that may be considering establishing large-scale projects in peripheral regions.

5.3.1 Implications for firm managers and entrepreneurs

While this thesis illustrates that large partners may provide small firms with invaluable access to knowledge, resources, and markets, entering into and managing large-partner alliances can be a challenging and resource-demanding task. For small and/or

inexperienced firms in peripheral regions, a vital stage in establishing an alliance involves an extensive positioning process. The positioning process should include two activities. First, managers/entrepreneurs should seek to extend their network relations to include individuals that possess key knowledge about the industry. For this purpose, managers/entrepreneurs should be proactive and actively seek arenas in which their respective business sectors interact. For example, they should strive to participate in industry-specific national trade associations or trade shows and events that gather key individuals in the industry. Second, managers/entrepreneurs should map and develop the internal resources of their firm. Through this process, they can identify the specific strengths and weaknesses of their resource bases and subsequently cultivate the capabilities of their firm. Because of the positioning process, managers/entrepreneurs may be better able to identify potential partners through their network relations, assess partners that provide access to missing resources, and approach partners that would appreciate the capabilities of the small firm. Overall, the positioning process increases the visibility and legitimacy of small firms and thereby reduces the liabilities of being located distant from potential partners.

Furthermore, managers/entrepreneurs must be aware of the potential barriers and hurdles related to cooperation with a larger and more powerful partner. Because of the power gap in the relationship, small firms may run the risk of being run over even though the terms of the collaboration are stated in formal contracts. Therefore, when managers/entrepreneurs are able to establish strategic alliances with large partners, they should strive to establish trust-based relationships with 3-4 key individuals in the partner firm. Establishing such relationships may improve understanding and compliance, further increase the potential for extracting value from the collaboration, and reduce the likelihood that the alliance fails.

When managers/entrepreneurs consider firm acquisitions as a means to acquire missing resources, they should be selected carefully and strategically so that they complement their existing resource base. The findings particularly highlight the value of acquiring firms that provide access to human resources possessing technical competencies (e.g., engineers) or industry-specific experience. These resources may significantly improve firms' ability to understand the requirements that new markets demand and may be a vital source of legitimacy when approaching large potential partners. Furthermore, by accessing external human resources, a focal firm may benefit from access to new external networks.

5.3.2 Policymakers

Policymakers should draw their attention towards the findings that illustrate how large-scale projects (i.e., exogenous shock) have the power to facilitate societal change and development in less-developed regions. Notably, national policymakers should promote the localisation of key project functions in peripheral regions, which secures the regional presence of project decision makers and thus potentially increases the opportunities for regional firms to exploit upcoming business opportunities. Moreover, policy measures should be aimed at project managers during the earliest project phases. In this way, project managers have the potential to adapt prior to final decisions regarding, e.g., localisation and the use of regional suppliers. Regarding the choice of appropriate locations, national policymakers should strive to identify only regions with industries that either match the needs of the project activity or that have the ability to adapt to new requirements. That is, regional policies should be strategic in nature.

Simultaneously, national policymakers should acknowledge the challenges that firms and public authorities in peripheral regions face in the event of sudden changes. For

example, public authorities may be forced to invest in infrastructure developments because of their facilitator role. Furthermore, national policymakers should further recognise the idiosyncratic nature of regions, which implies the need for flexible and perhaps individually designed government support tools.

Finally, regional public authorities should strive to establish close relationships with regional industry in the event of exogenous shocks. Such relationships are important because firm representatives and public officials need to know each other's roles and challenges in the event of a changing environment and because information about these changes should be distributed among the stakeholders. Close relationships with regional industry are of particular importance when regions suffer from thin institutional structures or a lack of experience regarding the nature of the entrant's industry.

5.3.3 Large firms that enter peripheral regions

This thesis has provided several insights into the role of large firms when they develop large-scale projects in peripheral regions. I would like to highlight two particular suggestions for such actors. The first suggestion concerns the vital importance of establishing a permanent team of key individuals (e.g., management, communication officers, and purchasing managers). Their role should be to get to know the region and to map and communicate with the project stakeholders. In this way, stakeholders can direct their inquiries to a small group of people and, over time, establish social relations. Notably, regional policymakers should be given continuous first-hand information about their role as facilitators. Furthermore, regional industry should be approached at an early stage through initial public meetings during which the team informs attendees about the project and the opportunities for local contracts. The second approach should include individual meetings with the firms that have the

potential to deliver goods or services. Eventual shortcomings should be addressed clearly so that regional firms have the opportunity to adapt. Moreover, the project's main supplier(s) should be present during the firm meetings. Through this orientation, the project team will learn about the dynamics of the regional industry, and regional firms will be provided with opportunities that were previously reserved for established actors in the industry.

The second suggestion concerns the localisation of the purchasing department and parts of the project department in the project region. Insights from this thesis suggest that this factor may be crucial for peripherally located firms' ability to develop, as the local presence of key project units provides the opportunity for regional firms to maintain close and continuous interaction with the project developer. Furthermore, the findings of this thesis illustrate that large national/international suppliers are prone to locate closer to where they supply products or services. Such localisation facilitates the opportunity for peripheral regions to develop because of strengthened institutional structures and the growth of regional firms through the new market.

The measures surrounding these suggestions are likely to demand extensive resources; however, the insights from this thesis indicate that, in the long run, the measures facilitate national and international recognition and a prosperous co-existence with regional stakeholders. Overall, these suggestions represent a new approach to large-scale project developments in peripheral regions. By looking beyond 'business as usual', large corporations have a unique potential to pull peripheral regions out of stagnation and decline and into growth and prosperity.

5.4 Limitations

This thesis has several limitations that should be considered as the findings and implications are interpreted. First, the thesis explores a number of phenomena in the narrow contexts of peripheral regions and the oil and gas industry. A region represents a geographical fragment of the nation to which it belongs, and thus, it shares a number of nation-state characteristics owing to public governance. However, simultaneously, regions are idiosyncratic in terms of their history and culture, industry composition, population and workforce size, institutional setup, and so forth. Furthermore, the oil and gas industry may differ from comparable industrial sectors in terms of, e.g., supply chain design and the degree of governmental regulation. Consequently, the transferability of the findings may require some consideration of geographical and industrial scope.

A related limitation relates to the use of well-established theoretical concepts in less studied contexts. In particular, the interpretation and use of the cluster and RIS concepts is adapted to the context of peripheral regions that evolve through a development process. No existing explanatory model is able to capture such specific (and indeed idiosyncratic) contextual mechanisms; thus, the interpretations are made based on the best of my ability to employ insights from the empirical data and the limited number of existing similar studies.

The multilevel conceptual model (Figure 7) proposes that particular mechanisms may stimulate development at the firm level and thereby facilitate cluster and RIS emergence. The particular mechanisms are based on observations in the empirical data, which were collected based on insights from a set of carefully selected theoretical concepts and previous research. The conceptual model thereby follows a specific theoretical path that may overemphasise some factors and miss others.

Consequently, by employing a different set of theoretical concepts, future research may identify factors that provide a better explanation for the mechanisms that stimulate development paths in peripheral regions.

While I argue that a multilevel approach is needed to obtain a holistic understanding of regional development processes, the breadth of this strategy may also represent a limitation. That is, the findings and conclusions may fail to uncover the more fine-grained aspects that underlie my observations and interpretations. For example, opportunity recognition and exploitation emerged as central topics in the process of exploring the different phenomena that address regional development. The opportunity recognition and exploitation literature could have provided tools for acquiring more detailed insights about how small firms managed to enter new markets. Moreover, a multilevel approach may fail to provide a sufficient degree of insight at the individual micro and macro levels.

Because of the timeframe of this research project, the findings report insights only about the earliest stages of the identified regional development paths. Consequently, providing accounts about the mechanisms that stimulate development processes past the early stage is beyond the scope of this thesis. For example, it is difficult to determine whether the emerging RIS (Paper 1) and cluster (Paper 2) structures managed to continue developing past the emergence and early growth stage.

5.5 Suggestions for further research

While the thesis is premised by several limitations, some of these limitations provide fruitful avenues for further research. Regarding the multilevel conceptual model, its current design allows for further studies in other contexts. Insights from other contexts and industries may help to develop the model from its conceptual state to an empirically founded model. In turn, such research can provide valuable

contributions addressing the current lack of attention towards peripheral or other lagging regions. In addition, different theoretical lenses may be used to explore other contexts. The use of such lenses may add different mechanisms to the positioning, mobilisation, and operationalisation stages and thereby strengthen the application of the model. Furthermore, an interesting approach could be to apply the conceptual model to failed cases—that is similar cases where exogenous shocks have failed to stimulate change and development. Similarly, it would be interesting to explore how the model applies to successful regions that host large powerful firms. In general, the application of the model in different regional contexts and industries may yield insights that help to elucidate why some regions manage to develop and prosper whereas other do not.

The results of this study highlight the potentially vital role of large firms when they enter small, peripheral regions. An interesting opportunity for further research would be to more closely examine the strategies that large entrants follow when they enter small communities. The insights from Paper 2 indicate that philosophies may differ among large firms when they approach small communities and that outcomes regarding a community's ability to develop may thus greatly differ. For example, applying the stakeholder framework to explore how large firms consider their surroundings when they establish themselves in new locations could be an interesting research avenue. Similarly, scholars could explore whether large entrants perceive their surroundings differently from large firms already located in a focal region.

The longitudinal design of this thesis made it possible to acquire detailed insights about regional development processes, and I believe that a longitudinal approach should be the preferred method for further developing the cluster and RIS literature. Notably, further studies exploring how clusters and RIS emerge in peripheral regions

are needed. I suggest that scholars should consider the use of longitudinal designs to capture these multifaceted and dynamic processes.

The thesis does not specifically consider aspects of learning. Therefore, for further research, one interesting issue would be to study in greater detail how absorptive capacity (Cohen and Levinthal, 1990) affects regional firms' ability to learn from, and exploit, new knowledge created by exogenous shocks. Previous studies have focused mainly on negative exogenous shocks; thus, another interesting issue would be to more closely examine similar cases of successful exogenous shocks. Such research would further extend the existing knowledge of how external pressures affect regions.

This thesis provides novel insights into the formation of small firm-large firm alliances and their dynamics. However, the findings are largely based on the perspective of small firms. Consequently, further studies should also explore how large firms perceive and adapt to small firm collaboration. Furthermore, additional research should focus on the reasons why some alliances fail. An interesting approach could be to conduct longitudinal research that explores in detail how the value of nonspatial proximity evolves over time and how size-asymmetrical partners gradually establish interdependence. Such research may benefit from large-scale longitudinal surveys across industries and geographical contexts.

Finally, I hope that the results of the thesis and the suggestions for further research open up promising ways to extend our knowledge about the mechanisms that foster regional development.

7. References

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