Entering a Global Play

Insights into Swedish Small Life science Firms' Legitimation in International Networks

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Dissertation for the Degree of Doctor of Philosophy, Ph.D.,
in Business Administration
Stockholm School of Economics, 2016

Entering a Global Play: Insights into Swedish Small Life Science Firms' Legitimation in International Networks

ISBN 978-91-7258-985-8 (printed)
ISBN 978-91-7258-986-5 (pdf)

Front cover illustration:
© Eugene Ivanov/Shutterstock, 2016

Back cover photo:
Nicklas Gustafsson/Arctistic, 2015

Printed by:
Ineko, Göteborg, 2016

Keywords:
Legitimacy, legitimation, life science, small firms, internationalization, business networks, international entrepreneurship, SMEs, technology start-ups

To
the Memory of Hamiyet Özbek

Foreword

This volume is the result of a research project carried out at the Department of Marketing and Strategy at the Stockholm School of Economics (SSE).

This volume is submitted as a doctor's thesis at SSE. In keeping with the policies of SSE, the author has been entirely free to conduct and present her research in the manner of her choosing as an expression of her own ideas.

SSE is grateful for the financial support provided by the Jan Wallander and Tom Hedelius' Foundation, Handelsbanken which has made it possible to fulfill the project.

Göran Lindqvist

Director of Research
Stockholm School of Economics

Richard Wahlund

Professor and Head of the
Marketing and Strategy Department

Acknowledgements

When I was given the opportunity of receiving the training to be an academic researcher, I felt great enthusiasm and joy. After all, I have always aspired to become one. However, it did not take me long to realize that my greater fortune was having the amount of intellectual and emotional support that got me to complete it. For that, I would like to thank all the scholars to whom I read and who charged me with inspiration and knowledge. However, there is a list of people who has personally put effort on my development and to whom I am truly grateful.

First, and foremost, I would like to thank Deo Sharma. I am glad that he showed such persistence in improving my dissertation, and appreciate the proficient supervision he has provided. I would also like to express my deepest gratitude for the other members of my supervision committee, Per Andersson and Daniel Tolstoy for showing interest in my research, reading my work countless times, and providing me with great feedback each time we met. Thank you all for presenting exemplary academic generosity besides supervision during this period!

There were also other people who left marks in my PhD project at several milestones. One of them is Cecilia Mark-Herbert, my Master's thesis supervisor, co-author, and friend, who encouraged me to start a PhD in the first place. The other one is Angelika Lindstrand who provided me with intellectual stimuli to develop my ideas, and has been a guiding collaborator and co-author. Our collaboration has improved this dissertation remarkably. My deepest gratitude goes to Kent Eriksson who also contributed this dissertation significantly by presenting constructive feedback as my thesis proposal discussant and by adding great knowledge to it as my co-author. I am thankful to Udo Zander and Henrik Agndal for conducting an excellent mock-defense seminar by both challenging and encouraging my work. I

also appreciate Lars-Gunnar Mattsson's valuable suggestions on the previous version of my manuscript that contributed to its further development. Indeed, I used them all.

I am grateful to each of my colleagues at SSE who have shown interest and support in my research. My special gratitude goes to Sara Melén Hånell, and Emilia Rovira Nordman for sharing their past PhD experiences with me. I am indebted to Emre Yildiz for offering his help and giving valuable research advices. I would like to thank Marijane Jonsson for our insightful and fun conversations. I am also grateful to Angelika Löfgren with whom I previously had the chance to share my office and to start a lasting friendship. I thank Robin Teigland and Marie Tsujita for welcoming us warmly to the PhD program and also supporting us through it; and Tina Bengtsson for her constant great help. I also want to recognize Helena Lundin and the Research Office for their essential support throughout the final stages. One person that I need to express my gratitude specially is Pär Mårtensson. Pär has given me the chance to assist him with his pedagogy development work at SSE, made me feel useful and all enthusiastic about teaching, and contributed to my development as a PhD student greatly. And finally thanks to all of my PhD comrades for the exchange of valuable ideas and experiences.

One important landmark during my studies was also the time I spent in Scotland in the spring 2014. Marian Jones, who hosted my visit at the University of Glasgow, contributed significantly in turning my stay there into a milestone of my PhD training. She influenced me directly by showing interest in my research and also indirectly by presenting an academic model who combines immense knowledge with permanent intellectual curiosity. My sincere thanks also go to the rest of the CIER group, especially Pavlos Dimitratos, Collin Mason, and Yee Kwan Tang who offered their times generously during my stay. I am also thankful to the faculty of Scancor Workshop, 2012 for providing deep knowledge of institutional theory in such short time. Among all, I would like to thank specifically to Jason Owen-Smith who has generously shared his knowledge a number of times I consulted him.

Finally, I would like to express my deepest gratitude also for the managers of the firms and the other organizations who have taken part in the interviews. Thank you for making this study possible!

During this PhD, I have always considered myself lucky, because I started it at the same time with Julia Rotter. Now, after completing it, I know by heart that I could not have wished anything better than sharing this process with a close friend. Thank you, Julia! Your friendship has made it great fun and your support is imprinted in every part of this dissertation. I should also thank to my family, firstly to my sisters, Aynur Uluc and Gülnur Bilgin and all the other members for being constant source of joy and considerateness. And my special gratitude goes to the other part of my family, Irem Uygurmen, Ivgen Simsek, and Tülin Karagüllü. My friends, and a big part of me, I do not recall anything I have started since the age of eleven without feeling your support, let alone completed. I am thankful to Per Åhblom, Laura James, Katharina Fink, Christina Yongwen, Peppi-Emilia Airike, and all my other dear friends whom I did not find the chance to name individually here but contributed to this journey at different times. And the last but not least, Mathias, şekerim! Thank you for being ready to raise a toast with me at each little step of accomplishment, and for managing to point out one each time I doubted whether there was any.

Finally, besides many other things, I perceive completing a PhD dissertation relates greatly to the extent of resilience and perseverance one can show in the face of uncertainty and frustration. Therefore, I'd like to thank my mother, Hamiyet Özbek, who taught me the virtue of holding on to humor and a good laughter.

For that, thank you and I dedicate this dissertation to you!

Istanbul, December 25, 2015

Nurgül Özbek

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PART I: Summary of the Dissertation

Chapter 1

Introduction

The title "Entering a global play" exhibits clues about the subject of this dissertation's research inquiries: small life science firms. In many cases, these clues stem from the presence of a global network of researchers, customers, suppliers, venture capitalists, and talents as keys to commercialize and exploit life science technologies (Onetti, Zucchella, Jones, & McDougall-Covin, 2012). In accordance with this view, the ultimate goal of life science ventures is to establish positions in this network ideally to be able to develop their technologies and eventually sell their products and services (Jones, Wheeler, & Dimitratos, 2011). Sociologists have argued that economic behavior is embedded in an ongoing pattern of social relations and logic of exchange (Granovetter, 1985). In this manner, the international/global life science network provides a social structure in which firms operate, but also forms the basis on which their activities are observed and interpreted by other actors. Thus, firms that pursue exploitation of their technologies in international markets come to perform roles within this network in front of a local, international, and global audience all at once, while at the same time entering the scene of a global play.

Built on this metaphor, this dissertation project searches for answers to a number of naturally provoked questions in this context, such as: Whom do firms perceive as the audiences that evaluate their adequacy to become legitimate actors? How do firms display their fitness for their roles? And last but not least, how do firms ensure their suitability for the next scene? The study aims to shed some light on these questions, and investigates how

small life science firms pursue legitimation when entering a global play as a requisite of developing and establishing a global business.

1.1. Motivations of the study and the research purpose

Small life science firms, among other technology ventures, are broadly recognized as the engine of global sustainable growth and value creation (Fontes & Coombs, 2001; Grinstein & Goldman, 2006; Vinnova, 2014). Life science entrepreneurial success, on the other hand, is commonly associated with not just the advancement of a valuable technology, but also how skillful the firm is at exploiting this technology in world markets (Acs, Morck, & Yeung, 2001). However, achieving this task in an industry characterized with long product development lead-times coupled with short windows of opportunity and rapid technological change is not straightforward. It often requires a complex blend of managerial skills and technical proficiency. Among these, one managerial challenge has been given particular importance in the previous literature: the ability to convince customers, investors, and critical third parties that an organization is perceived as meaningful and worthy in the marketplace (Garud & Rappa 1994; Van de Ven, 2005). It has been widely acknowledged that firms founded to introduce new technologies to markets often confront challenges that emanate from external actors' lack of motivation to engage in exchanges with them. Hence, attaining legitimacy is considered one way of managing these relationships and is vital for organizational survival and success (Hargadon & Douglas 2001).

According to organizational institutional theory, once conferred legitimacy, external actors identify organizations as more predictable and more trustworthy (Suchman, 1995). Consistent with this view,[1] legitimacy has

[1] Legitimacy in this study manifests itself in the attitudinal and behavioral decisions of the external parties and advantageous and disadvantageous outcomes for the focal firm as a result of these behaviors. Among these outcomes, the ones that are emphasized most often in the literature are enhanced or restricted resource access and social support (Aldrich & Fiol, 1994; DiMaggio & Powell, 1983: Meyer & Rowan, 1977), fewer constraints due to liability of newness (Stinchcombe, 1965), and attraction of customers, clients, and investors (Aldrich & Ruef, 2006; Shane & Stuart, 2002). However, I acknowledge that

been widely accepted to have economic and strategic implications for organizations in terms of increasing their chances of social support and access to resources (see review by Bitektine, 2011). Overall, the significance of legitimacy and the fact that organizations act in a world of socially constructed prescriptions of appropriateness has become widely acknowledged in a variety of social science fields (Scott, 1995, 2008). A number of scholars have even viewed legitimacy as a meta-resource that must be acquired by new ventures in order to access other resources (Dowling & Pfeffer, 1975; Zimmerman & Zeitz, 2002). However, others have argued that legitimacy is not another type of resource but rather a condition of consonance with prevalent rules and laws (e.g., Scott, 1995). Nevertheless, from a small and young life science firm's perspective, pursuing legitimation in the eyes of the firm's immediate resource-holding audience becomes a primary managerial undertaking, either as a condition to achieve and sustain or as a resource to acquire. Hence, this assumption comprises the main point of departure for this dissertation.

However, this study does not consider attaining legitimacy to answer all the questions regarding how a start-up moves beyond the laboratory stage of technological advancement where a firm has few or no business relationships to an organization with products and services sold in international markets. Many other factors are important when trying to comprehend a young life science firm's successful venturing, such as the state of the financing climate, latent demand for the niche product or service, and competitive pressures (Ernst & Young, 2015). However, this study suggests legitimation issues to be more eminent than previously recognized.

We can take the case story of Company N, one of the life science companies studied in this dissertation that works with bio- and medical-technologies, as an illustrative example.

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in the original construction of the concept legitimacy, the explanatory reasoning suggested between the outcomes and the legitimacy was in the reverse order. As theorized by DiMaggio and Powell (1983), legitimacy is an explanation of the similarity ("isomorphism") and the stability of organizational practices and structures in a given field.

1.1.1. Case Company N – Story of an international life science small firm

Company N was a start-up in Stockholm, spun-off from academia and based on an innovation with estimated market potential. The company succeeded in developing its technology further into products and services through several research projects in collaboration with universities, research institutions, and companies of diverse sizes and from a range of countries – Bulgaria, Germany, Italy, Netherlands, Switzerland, and UK, among others. In a few years, it achieved a licensing agreement for its product with two multinational corporations based in the US and Japan. At the same time, the company began directly offering its service to a number of customers in the US and Europe. Soon, it achieved substantial sales growth, and expanded the geographical diversification of its customer portfolio to over 50 countries in Europe, Asia, and North America. At the same time, Company N broadened the range of its technology and business with drug development projects, mostly by utilizing research collaborations. It is hoped that products developed for this new target business segment, if successful, will be applicable in tens of national markets concurrently.

The case company provides a single, yet typical, example of a small firm with products and services successfully flowing through the international innovation and production value systems of the life science industry. In brief, Company N, while providing services for pharmaceutical companies that are operating internationally in the manufacturing and marketing stages of a global value chain, was also engaged in developing a range of technologies, and in discovering drugs with the aim of marketing them internationally (Hine & Kapeleris, 2006, p. 184). In line with previous studies of life science ventures' internationalization, Company N's international network expansion took place as entangled with its overall activities involving innovation and commercialization, as well as marketing, sales, and distribution (Jones, 1999; Onetti et al., 2012). To summarize, the story of Company N's internationalization was built on advancement of the firm's technological capabilities through exchanges and collaborations, mostly with international actors, and the transfer of these technologies to international markets. However, let us return to the case for a moment, for a different version of the story.

The founder started Company N based on the technology developed during his PhD studies at a Swedish university. Inherent in the nature of the defining science and technology base of the company, starting a business involved further development of the case firm's original technology, and, therefore, the gathering of a diverse range of necessary expertise. At the beginning, the company looked to collaborate with partners that could provide the specific technology that it lacked in the organization and in its present network. It utilized public research projects to gain access to these international collaborations, such as EU framework programs. Simultaneously, participation in these programs functioned both as a way to access complementary technological capabilities and as a validation for their technological capabilities towards future research and development (R&D) partners. While continuing to advance its technology base, Company N also pursued international customers to exploit its technology. However, it had limited market performance records connected to its technology's outcomes, as well as limited organizational network records due to the absence of any previous business relationships; therefore, it faced difficulties in reaching prospective customers. Thus, it proactively engaged in specific practices in order to be perceived as a valid prospective supplier. It engaged in collaborations with several institutions in Sweden and pursued associations with certain business organizations by providing low-margin services. The founding CEO of Company N mentioned one of the central management activities initially involved efforts to assure the presence of key actors in the company's focal network in order to validate their technology and the organization, and thus to become a legitimate actor in an international market.

The storyline in the latter version revolved not around the number or the type of business partners and business relationships the firm achieved, but around the management's efforts to approach specific external actors in order to commence interactions and subsequently develop the business relationships it intended. It demonstrates that if Company N did not validate its technology and organization, it might have put itself at risk of lack of attention or outright rejection by its technology-development collaborators or customers, which might have resulted in its access to international networks being restricted. Network views on markets and internationalization suggest that as a firm becomes established in a foreign market, it also becomes an insider in its business networks (Johanson & Vahlne, 2009). On the other hand, in order to become established in a market, a firm initially needs to build relationships, which are new both to itself and to its counterparts (Johanson & Mattsson, 1988). According to Arthur L. Stinchcombe's (1965) study, which is presently one of the most cited studies of organizations, new ventures in particular face a difficult task while inventing and managing new organizational roles among potential strangers, as

opposed to cases of more established organizations, which can rely on a stable set of existing relationships. Due to the characteristically limited size of its focal network, a new firm often needs to build many relationships from scratch, yet at the same time confront difficulties that are mostly associated with the liability of newness (Stinchcombe, 1965) and liability of smallness (Freeman, Carroll, & Hannan, 1983). Put differently, if the other actors do not know the processes and the outcomes of an organization, and if that focal organization cannot show sufficient resources or records of accomplishment, initiating a relationship to access a network as the first step to insidership becomes a significant challenge. A 2012 European Union (EU) report identified one of the most common difficulties that technology firms face during international venturing as occurring when they seek their prospective exchange partners' attention and support for a product or service of an unknown and untested company (Eurofound, 2012). Hence, firms' main motivation to pursue legitimation is to manage and eventually overcome these liabilities.

The main theoretical reasoning behind this suggestion is that the economic exchange between actors in a market typically reflects more than transactions, and that beneath most formal ties lie a vast number of social interactions and dynamics (Powell, Koput, & Smith-Doerr, 1996). Economic sociology (Macaulay, 1963) has demonstrated that even highly purposive economic exchanges are entangled with social expectations. When actors make a decision, whether it is closing a deal or initiating a contract with another actor, they are exposed to uncertainties and bounded rationality and often turn to unwritten rules, norms, and models while forming their judgments. Thus, legitimacy judgment reduces the evaluator's costs of information search and organization (Cyert & March, 1963; March & Simon, 1958), and allows the actor to appoint the organization as an eligible prospect for resource exchange (Bitektine, 2011).

Consequently, the second version of Company N's case story, in which the firm pursued organizational legitimation, potentially had implications on the direction that it took in the former version to achieve international growth. In this view, international development and growth of a small life science firm is at the same time a story of legitimation in international networks. My dissertation places the second story at its center and is motivated

to provide empirical insights and to present elements of theory on this topic. Thus, the overall research purpose of the dissertation is as follows:

> **Research purpose:** to develop a deeper understanding of small life science firms' legitimation in international networks.

1.2. Research focus and questions

Legitimacy refers to "the degree to which beholders perceive an organization as being congruent to social norms and standards" (Haack, Pfarrer, & Scherer, 2014, p. 635; Suchman, 1995; Tost, 2011). Categorized mainly according to the institutional pressures behind them, frequently studied legitimacy types are regulative legitimacy (its alignment with rules and laws), normative legitimacy (its alignment with norms and values), and cognitive legitimacy (its alignment with dominant ideas and beliefs) (see DiMaggio & Powell, 1983; Scott, 1995). In this dissertation, the organizational legitimacy studied is cognitive legitimacy. This type is generally related to knowledge about an organization and the products and services it offers (Aldrich & Fiol, 1994, p. 648). As the motivation for small life science firms' quest for legitimacy emerges mostly from the high uncertainty factor surrounding them, cognitive legitimacy is accordingly considered the most relevant one for this study.

Contemporary perspectives view legitimacy as the outcome of legitimation; a collective process of validation that takes place throughout the existence of a social object, such as a new organization and its audiences (e.g., Cattani, Ferriani, Negro, & Perretti, 2008; Johnson, Dowd, & Ridgeway, 2006). First, by collective legitimation, the present study refers to the process of international/global market legitimation, during which a life science venture is validated by various individual actors if it is in consonance with the widespread beliefs about what constitutes "standard" or "normal" organizational behavior (Bitektine & Haack, 2015). Thus, it gradually becomes easier and more likely for the firm to find the endorsement and support of these actors throughout legitimation. Hence, in this study, cognitive legitimacy is considered to be attained if the understanding and

knowledge about a life science venture is spread among the actors in international markets, or at least among the most prominent ones.

Small firms' legitimation during internationalizing has provoked remarkable research interest recently, especially in the area of international entrepreneurship. Studies that have adopted an entrepreneurially driven view of small-firm internationalization have mostly concentrated on firms' proactive strategies that help them deal with the liabilities associated with new ventures in general (e.g., Bailetti, 2012; Simba & Ndlovu, 2014; Sullivan Mort et al., 2012; Turcan, 2013). In this respect, this body of research provides valuable conceptual and empirical insights that capture the conditions inherent in these firms' small size and young age. However, research on the topic is still at an embryonic stage. Hence, the first research question emerges broadly as:

> Research question 1: How do small life science firms pursue legitimation in international networks?

Furthermore, although the challenge of attaining legitimacy is considered generic for all life science firms, it is recognized that not all the firms are identical. In line with the legitimation view adopted in this dissertation – that it is a context-dependent social construction process (Johnson et al., 2006) – firm-specific factors are also expected to create variations of firm legitimation. Thus, the second research question is presented as follows:

> Research question 2: How do firm-specific differences influence small life science firms' legitimation in international networks?

1.3 Delimitations

In an effort to address the aforementioned research questions, the principal empirical focus of the study is small Swedish companies that have been founded for the purpose of exploiting their life science technologies in markets and pursue the use of resources and the sale of outputs in multiple countries for achieving this task. While pursuing this undertaking, the study has been constrained by a variety of delimitations (that is, characteristics

that limit the scope and define the boundaries of the study based on the choices made (Leedy & Ormrod, 2010)). The delimitations regarding the dissertation's core research focuses are outlined below (however, the limitations emanating as the results of these choices are highlighted in more detail under each relevant chapter).

This dissertation views the process through a lens dominated by the focal firms' perspective. Hence, the study is delimited to what the informants in the firms perceive as valuable for their organizational legitimation, and the actors they perceive as influential. However, when it comes to drawing empirical boundaries for the presence of external legitimacy, explicit proxies have been taken into consideration. Legitimacy ultimately exists in the eyes of the beholder (Bitektine, 2011); it is an unobservable construct, and can only be derived from the actions of the external actors (Tornikoski & Newbert, 2007). This study relies mainly on the argument that recognizes validation and endorsement as the tenacity of legitimation and legitimacy to enhance firms' resource access, survival, and growth. Legitimate firms are accordingly appointed as those that are successful. Correspondingly, firms that lack legitimacy are considered as lacking the required social support, and will eventually fail or cease to operate (Zimmerman & Zeitz, 2002). Growth, a history of network expansion with critical resource holders, and a presence in world markets are all taken as indicators of success, which have been pointed out as crucial for survival specific to the industry chosen in the study (Ernst & Young, 2015). On the other hand, "illegitimacy" is recognized as analytically distinct from "lack of legitimacy". The concept of illegitimacy is mainly defined by the notion of "negative legitimacy", or "social disapproval" (see Haack et al., 2014; Hudson, 2008; Hudson & Okhuysen, 2009), and does not fall within in the dissertation's focus.

The present study is designed to consider firms in the life science industry. However, despite the idiosyncrasies of the industry, the results are considered relevant for firms in many technology-driven markets, such as IT and electronics, which often carry the dynamics that stem from certain conditions that distinguish them from their counterparts in more conventional business fields. These are mostly the essentialness of assuring access to the required set of technical knowledge that might generally be spread across borders, the fast pace of product cycles, and pressure from world-

wide competitors that prevent their domestic markets from truly offering any exclusion from international competition (Crick & Jones, 2000; Gassman & Reepmeyer, 2005). Comparing the results of this study with firms in the context of other technology-driven industries, as well as conventional ones, is expected to enhance the generalizability of the study's results; however, it is beyond the delimitations drawn.

In the dissertation, with the exception of the first article, which is appointed to a supplementary role in answering the study's main research questions, the research purpose is pursued from a qualitative point of view. Qualitative methods provide this study the opportunity to investigate legitimation at a micro level through the stories of the firms. Hence, it serves as a suitable instrument for exploring the subject in a more comprehensive way. At the same time, the ambition is to be more than simply descriptive. Based upon the findings, I aspire to generate elements of theory and a preliminary framework that provides a basis of understanding small-firm legitimation in international networks. Eventually, the study may offer future research opportunities to apply other relevant methods to study the causalities between the proposed constructs.

1.4 Structure of the dissertation

The dissertation is a compilation of articles and comprises two parts. Part I is a dense summary of the dissertation project as a whole, while Part II consists of the four articles that cover the project's studies. Part I is presented in separate chapters. These are:

- Chapter 1: The present chapter has introduced the topic and laid the foundation of the research purpose and its relevance to life science firms' international development and growth. It has depicted the study's research focus and presents the principal research questions.
- Chapter 2: The research design is outlined.
- Chapter 3: Empirical foundations of the dissertation project and information on the market structure and prominent actors of the life science industry are provided.

- Chapter 4: Theoretical foundations from which the main reasoning of the study is derived when pursuing the dissertation's principal purpose are presented.
- Chapter 5: An analytical framework of capturing small life science firms' legitimation in international networks in light of the theoretical foundations displayed in the previous chapter are developed and presented.
- Chapter 6: Brief summaries of each article in the dissertation and their individual contributions to the purpose are portrayed. Findings of the articles are discussed in the form of answers to each of the two individual research questions; therefore aims at synthesizing the major findings of the whole study.
- Chapter 7: The particular contributions of the dissertation to the theory and practice are outlined, and avenues for future research are discussed.

1.5 Key concepts

Table 1 provides a list of short definitions of key concepts used in the dissertation. Each concept will be further elaborated in relevant sections.

Table 1. Definitions of key concepts used in the dissertation

Term	Definition
Business networks	"A set of two or more connected business relationships, in which each exchange relation is between organizations that are conceptualized as collective actors" (Anderson, Håkansson, & Johanson, 1994, p. 2).
Business relationship	The interaction and resource exchange between the firm and the other actors (Gadde and Mattsson, 1987).
Institutions	"Regulative, normative, and cognitive structures and activities that provide stability and meaning to social behavior" (Scott, 2001, p. 33).

Legitimacy	"The degree to which beholders perceive an organization as being congruent to social norms and standards" (Haack et al., 2014, p. 635; Suchman, 1995; Tost, 2011).
Legitimacy-seeking	A focal organization's engagement in practices of proactively influencing legitimation through activities of interaction, communication, and exchange with external actors (Kostova, Roth, & Dacin, 2008).
Legitimation	A collective validation process that takes place throughout the existence of a social object, such as a new organization and its audiences (e.g., Cattani et al., 2008; Johnson et al., 2006). In this study, the term refers to market legitimation, during which a new firm is supported to exist, and grows among the aggregate market players (Dacin et al., 2007). Thus, what is accepted as legitimate depends on the consensus among the aggregate actors of a specific market about what features or activities of a firm are acceptable.
Legitimation network path	Interdependencies of validations by different actors throughout a focal firm's legitimation over time.
Life science industry	"A complex amalgamation of interconnected sectors comprising a diverse range of knowledge-intensive and often highly specialized companies" (Jones et al., 2011, p. 3).
Small-firm	Firms with employees fewer than 50 (OECD, 2005).
Technology firm	The definition by sector is used, which is a common approach in the literature to distinguish technology-based firms operating in high-tech industries. Based on OECD definitions (2012), a wide range of sectors are normally considered high-tech, such as aerospace, biotechnology, chemistry, electrical machinery and apparatus, ICT, pharmaceuticals, and robotics and process automation.

Chapter 2

Research Design

2.1 Overview of the research design

In designing the research methodology of this dissertation, my work has been influenced to a large extent by the transformation process I was going through as a PhD student. Overall, the research design employs mixed methods, and I made particular methodological choices along the process during which the body of knowledge and my understanding continually extended. The process initially began by studying my research topic in general and by conducting a number of explorative interviews with a preliminary group of small life science firms in Istanbul, Turkey in the first half of 2012. I continued my research by applying quantitative analysis techniques to a large data set, which was built with the purpose of investigating the international business relationships of Swedish small- and medium-sized firms (SMEs) from various industries. I was able to access survey-based data that had been collected by my colleagues from the research group "Internationalization in Networks" (INET)[2]. My collaboration with my two co-authors from the INET group provided the opportunity to inspect the relationship between the focal firms' connectedness to the host country networks and its relationship with perceived institutional impediments and

[2] The members of the INET group included Dharma Deo Sharma, Kent Eriksson, Angelika Lindstrand, Jessica Lindberg, Jukka Hohenthal, Sara Melen Hanell, Sara Jonsson, Emilia Rovira Nordman, Daniel Tolstoy, and Angelika Löfgren. This data set resulted in several research publications, including dissertations by Melen (2009), Rovira-Nordman (2009), Tolstoy (2010), and Löfgren (2014).

performance implications (Article 1). The findings pertained not only to small life science firms but also to a wider range of industries and firm sizes. Nonetheless, this part of the study has served my project by showing that institutions matter for firms when expanding into international networks, thus confirming the research value of my principal interest.

At the same time, in order to examine the legitimation of small life science firms in greater depth, the qualitative part of the study was designed by selecting cases from Swedish life science firms. The sampling and the data collection parts of the qualitative study were conducted in collaboration with the project International Life of Biotech[3]. The qualitative data provided the insights into the legitimation of these firms. The empirical and conceptual findings derived from the case studies are then presented in Articles 2, 3, and 4. The development of Part I, the summary of the dissertation project, is then conducted at the same time of developing these three articles. Thereby the formulation of both parts mutually shaped each other.

The primary unit of analysis in the overall study is organizational legitimation, in which the level of analysis is the organization. This principal unit of analysis is then operationalized by incorporating different units throughout the different papers in the thesis. In Article 1, the analysis is aimed at investigating the dyadic network relationship belonging to an individual firm and testing how it is influenced by the firm's investments within the specific relationship and the presence of connections to other actors. However, the analysis is on an aggregated level, where my co-authors and I concluded our findings from the analysis of dyadic network relationships from a group of firms.

In Article 2, the previous literature focusing on international new venture legitimacy is reviewed. A conceptual model for small and new firm legitimation is proposed, where the unit of analysis is organizational legitimation.

In Article 3, the unit of analysis is organizational legitimation through legitimacy spillovers from focal firms' network partners. Case firms' indi-

[3] International Life of Biotech is a research project led by Angelika Lindstrand at the Stockholm School of Economics and is currently being conducted on Swedish biotechnology firms and the development of their business networks in foreign markets.

vidual networks are analyzed by investigating legitimacy spillovers between actor groups.

In Article 4, the aim is to investigate the practices of individual firms that are likely to enhance their legitimation in international markets and facilitate firms' network expansion by decreasing the uncertainty perceived by their prospective customers and network partners. Thus, the unit of analysis is again organizational legitimation.

Table 2 displays information about the general features of the research designs in the articles.

Table 2. General features of the research design of articles in the dissertation

Articles	Research approach	Objective	Primary data source	Unit of analysis	Level of analysis
Article 1	Quantitative	Confirmatory	Survey data, archival data	Dyadic network relationships	Firm level
Article 2	Qualitative	Conceptual development	Literature review	Organizational Legitimation	Firm level
Article 3	Qualitative	Exploratory	Interviews, archival data	Organizational legitimation	Firm level
Article 4	Qualitative	Exploratory	Interviews, archival data	Legitimacy-seeking practices	Firm level

Further information regarding the data and the methods are described in detail in the following sections under the subtitles of "Quantitative" and "Qualitative" studies.

2.2 Evaluating the quality of the study

A high-quality study answers research questions in a scientifically rigorous manner. Threats to a study's validity are generally found in three areas: external validity, internal validity, and construct validity (Mitchell, 1985). External validity – in other words, generalizability – indicates that new knowledge produced by the studies is practically or theoretically useful in

contexts other than the one studied (Ondercin, 2004). Generalization of research can be considered by two means: empirical and theoretical (Robson, 2002). Empirical generalizability depends on the extent that the sample studied was representative of the population, and theoretical generalizability extends findings to theoretical propositions. The overall research design in this dissertation utilizes theory building, where theory-building research aims to develop a generalizable theory from data (Hallen & Eisanhardt, 2012). Accordingly, theoretical generalizability was sought by comparing the findings from the empirical data with the extant literature and refining and positioning the findings into propositions accordingly.

Construct validity criterion refers to establishing correct operational measures for the concept being studied (Mitchell, 1985). In the quantitative part of the study, construct validity was assured by building the questionnaire with variables that stemmed from empirical observations and theoretical reviews. More specifically, variables were developed from three sources: previous research group questionnaires, a literature review conducted between the years 2002 and 2003, and case studies conducted before 2003. This data set resulted in several research publications, including dissertations by Melen (2009), Rovira-Nordman (2009), Tolstoy (2010), and Löfgren (2014). In the qualitative part, construct validity was sought by blending data from multiple sources as suggested by Eisenhardt (1989). Primary and secondary data sources were used for data collection and later for triangulation of the findings during analysis. Internal validity, on the other hand, denotes the extent to which the explanatory or causal relations built in the study are credible, such that alternative explanations of the results may be put aside (Yin, 2003). In this study, the explanations brought up in the findings were cross-checked and distinguished by enfolding the relevant conflicting literature.

The reliability of the data in the quantitative part of the study was ensured by conducting a pilot study in which the questionnaire was tested on six firms in Stockholm and Uppsala. Respondents' opinions about the clarity of the questions and whether they had experienced any problems while completing the questionnaire were collected before distributing it to the full sample. All six respondents informed the investigators who visited their offices and were present in the room while they answered the questionnaire

that the original questionnaire was too long. After the assessment of the respondents' feedback, the research group decided to shorten the questionnaire and modify and clarify certain expressions. To further ensure reliability, members of the INET research team travelled to the firms and administered distribution of the questionnaire personally to make sure that the right person was filling out the questionnaire.

In the qualitative part, choosing the respondents selectively, employing a carefully designed interview guide, presenting focal-firm network visualizations,[4] having two researchers on site during most of the interviews, and carefully transcribing the interview material contributed to the study's reliability. The reliability of the secondary data was achieved by using specific collection procedures. Reliability in qualitative inquiries refers to methodological transparency (Guba & Lincoln, 1994). This transparency is achieved by the rich descriptions of the analysis and the research context in the study (Marschan-Piekkari, Welch, Penttinen, & Tahvanainen, 2004). In addition, the reliability of the analysis is considered to be further improved by the researcher taking the opportunity to reach a comprehensive understanding of the case material by personally collecting all the secondary material, making the network visualizations, being present at all interviews, and transcribing them entirely.

2.2.1 Network visualizations: Improving the reliability of the interview data of networks

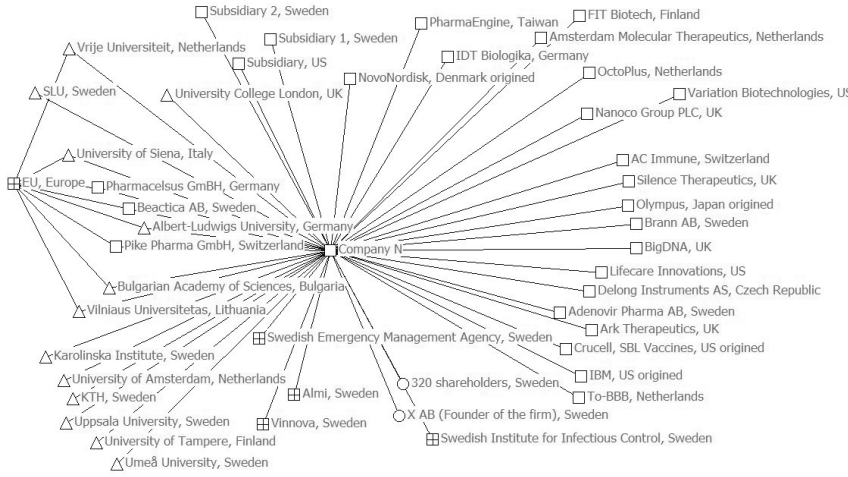
A stream of network scholars has raised concerns about the methodological implications of respondents' inability to accurately report their interactions (Borgatti & Foster, 2003). For this study, special efforts were made to overcome these concerns by presenting visualizations of their organizational networks to the respondents during the interviews.

The network visualizations comprised graphic illustrations of each interviewed firm's network relationships based on the data collected from the secondary sources prior to the interviews. These network relationships were outlined by identifying the key actors throughout the organizational

[4] Descriptions of the use of the network visualizations for this study, as well as information about how the data that the visualizations are based on were collected and sorted out are provided in detail in the subsections 2.2.1 and 2.6.2.

story of each case firm (refer to section 2.6.2, Data Collection, for further information on how secondary data is collected and sorted). The data about the case firms' organizational relationships was entered into the Social Network Analysis software UCINET (Borgatti, Everett, & Freeman, 2002). The individual networks of the case firms were then visualized using the software NETDRAW (Borgatti, 2002). Hence, 17 network visualizations were made before the 18 case interviews. These visualizations were used for presenting the firms' focal networks to the respondents during the interviews. The respondents were given the opportunity to comment on the content of their relationships with the displayed network partners, or add any missing ones. Thus, presenting the network visualizations to the respondents improved the accuracy of the respondents' perceptions of their firms' networks, and accordingly improved the reliability of the relevant discussions. Furthermore, it was observed that these pictures were highly appreciated by the interviewees and positively influenced their willingness to discuss their networks. I also found this visualization process useful as it provided a chance to form an understanding of the firms' network relationships and discuss with the respondents each firm's influence on the formation of others in a comprehensive manner. Figure 1 displays an example of network visualizations; this belongs to Case Company N, whose company history has been presented in the earlier parts of the dissertation document.

Figure 1: Illustration of case network visualizations



Example from Case Company N. Network partner categories are shown using the following symbols: Business organizations: square; research organizations: triangle; state organizations: square with cross; financial organizations: circle.

2.3 Research ethics

Ethics refers to conforming to a code or set of principles (Robson, 2002). The most important part of ethical considerations in social research relates to participants in the study. Such ethical considerations were aimed to operationalize in various ways in this study. For example, it was ensured that informants participated voluntarily, without compensation, and had the option to withdraw at any time. The participants were not involved in the research without their knowledge and consent in any part of the data collection processes. Furthermore, no information was withheld about the true nature of the research. Consequently, while disseminating the findings, the anonymity and protection of informants was considered.

2.4 Limitations regarding the research design

This study aims to investigate legitimation of small life science firms in international networks, and, as such, is subject to a number of limitations arising from the research design. First, the design relies on the history of the firms as reported by the interviewees and derived from secondary sources. In this manner, cases are all retrospective, in which all data was collected after the fact. This creates limitations compared to a longitudinal research design, such as in a retrospective case study, and the events and activities under study have already occurred, meaning the outcomes of these events and activities are known (Street & Ward, 2010). However, this provided the research design with the possibility of being able to recognize legitimacy in retrospect, which is very difficult to observe otherwise and therefore common in legitimation studies (Tornikoski & Newbert, 2007; Zimmerman & Zeitz, 2002). Furthermore, the cases comprise companies with a variety of ages. This variation allowed the study to enhance the reliability of the design by offering the opportunity to receive timely data from the sources in a range of cases at a variety of points along their legitimation. Thus, the time of the inquiry was recent enough that respondents were likely to recall events correctly (Huber & Power, 1985).

Another potential limitation concerns the selection of sources within the organizations. Those interviewed were narrowed down to a limited number of relevant informants. However, by choosing these respondents from key positions in the organizations, the study could obtain adequate information about the cases given their small sizes.

Additionally, there are limitations related to the research setting and unit of analysis brought about by the focus on business organizations and firms in only one country, Sweden. Sweden provides a suitable context for the study by demonstrating leading research institutes and a high number of international technology-based firms. However, the research design can be considered limited compared to one that would expand the empirical focus to firms from a number of different country contexts.

2.5 Quantitative study

2.5.1 Sample selection

A questionnaire-based statistical survey was conducted in Sweden in 2004/2005. A random sample of firms (belonging to various industries), each with 6–249 employees, was obtained from the Statistics Sweden Business Register. All of the firms included in the sample had at least 10 percent of their turnover abroad. The original sample consisted of 2000 firms, but after excluding firms that no longer matched the selection criteria (6–249 employees, 10 percent of turnover abroad), a final sample of 1666 firms was obtained. The data collection yielded a sample of 255 usable responses, and the overall response rate was 15 percent. For each of the respondents in the sample, national databases were used to collect accounting data (Business Data, Sweden), and data on the firms' exports to and imports other countries, divided into eight regions (SCB, Statistics Sweden). This was done to obtain information on performance and internationalization. Altogether, the data used came from three different sources, which was essential in order to avoid common method bias (Podsakoff & Organ, 1986).

2.5.2 Data collection

Via joint collaboration, researchers from the Stockholm School of Economics, Uppsala University, and the Royal Institute of Technology in 2004/2005 conducted the collection of survey data. The questionnaire was directed to respondents in SMEs that conduct international business. When answering the questionnaire, the respondents were asked to select a specific international business relationship with an international partner that had resulted in actual business and that was considered to be important to the respondent's firm. The questionnaire focused on performance in an international business relationship, institutional impediments to that relationship, business networks, and institutional organizations. The questionnaire was divided into three parts: one on the firm, one on the international business relationship, and one on institutional organizations and networks. A seven-item scale ranging from "strongly disagree" to "strongly agree"

was used to check the respondents' views on various questions (see Appendix 1 for the survey questions).

2.5.3 Description of the data

Among the respondents, 174 (68 percent) chose a relationship that had existed for three years or more and 188 (73 percent) had had operations in a foreign country for more than three years. Two firms had initiated relationships as early as 1950 and one firm had carried out its first operations in the country in 1926. A total of 138 firms had 6–49 employees and 117 firms had 50–249 employees. The data contained both technology-based (45 percent) and non-technology-based firms (55 percent) indicating that the analysis of the data may be valid for both types of firms (for information on the descriptive statistics, please refer to Article 1).

2.5.4 Data analysis

The analysis was conducted by developing hypotheses on theoretical assumptions and then testing them using structural equation modeling (SEM). SEM is a multivariate statistical technique that combines aspects of factor analysis and multiple regressions. The advantage of this method is that it enables the researcher to simultaneously examine a series of interrelated dependence relationships among the measured variables and latent constructs, as well as between several latent constructs (Hair, Black, Babin, & Anderson, 2010: 634). LISREL 8.71 is used as an SEM method. LISREL analyzes both error covariance and regular correlations of these relations in the model (Jöreskog & Sörbom, 1993). The analysis is computed in two stages. The first uses confirmatory factor analysis in a measurement model. The LISREL analysis provides factor scores that are used as weights in order to transform multiple item factors into composite factor variables, or constructs. The second stage of analysis comprises analyzing the constructs according to the hypothesized causal relationships. Thus, the method suits the purposes of this study as it provides the basis on which to represent unobserved concepts such as institutions in the networks of relationships" and defines a model to explain the entire set of relationships.

2.6 Qualitative study

A multiple-case study design was chosen because it is a suggested strategy when doing research that "involves an empirical investigation of a particular contemporary phenomenon within its real-life context using multiple sources of evidence" (Robson, 2002, p. 178). Furthermore, multiple case studies provide the opportunity to study the same questions in a number of organizations and compare them with each other to draw conclusions. Both secondary data sources and interviews with the companies and non-business actors were employed correspondingly as the principal data sources of the cases.

2.6.1 Case selection

The selection of all the cases in the thesis was made in the second half of 2012, according to literal replication logic. Yin (2003) proposed that the researcher can have two types of logic underlying the use of multiple case studies: Either the researcher can predict similar results (a literal replication) or predict contrasting results due to an existing theory (a theoretical replication). In literal replication, cases are sequentially analyzed as repeated experiments and the choice of cases is based on its contribution to theory development (Yin, 2003).

In this aim, first, a list of companies that belong to the whole population of life science firms in Sweden was extracted from the 2012 Swedish life science industry report of Vinnova, the Swedish State Innovation Agency. Sweden, despite its small size, has a strong presence on the global life science map due to its high reputation and firmly established institutions, which makes it a valid country context from which to choose life science companies. The population comprised 685 companies of a range of sizes. In accordance with the purpose of the thesis, the sample was limited to small-sized companies (those with fewer than 50 employees). Within that frame, I focused on firms that originated within a limited geographical area in order to minimize sample variation due to environmental factors. Cases were all from the Stockholm region, which is the largest life science region in Sweden (Vinnova, 2014). Regardless of having international revenues or not, all the case firms had been engaged in one or more forms of interna-

tional activity from their inception. The case companies had also had at least one of the following international activities in more than one foreign market since their foundation: purchasing, sales, marketing, distribution, or R&D collaborations. Thus, they were all connected to international networks. Subsidiaries, divisions, and joint ventures of multinational large firms were excluded from the sample as the constraints and the resources available to these firms are estimated to vary compared to those of individual start-ups.

Furthermore, I chose to follow previous studies that intentionally excluded firms in environmental, food-related, and industrial biotechnology segments and concentrate instead on the segments with a health focus, as they have been found to show significant differences compared to other segments, and have similarities to one another (Powell, Koput, & Smith-Doerr, 1996). I chose the cases from the specialized fields of therapeutics, diagnostics, biotech medical technology, and biotech production. Descriptions of segments are taken from the Vinnova, 2014 Life Science Sweden Report. Finally, the cases represented 18 firms, some of which are displayed in two separate articles (Articles 3 and 4). The overall sample size provided sufficient basis for testing theoretical saturation and for mimicking the segmented nature of the life science industry. Table 3 provides descriptions of the case firms.

Table 3. Case descriptions

Case name	Reg. date	No. of employees	Business segment	No. of patents	Geographical diversification	No. of International subsidiaries
Company A	2008	9	Therapeutics	3	Europe	
Company B	2006	5	Therapeutics	3	Europe, North America	
Company C	2000	28	Therapeutics	9	Europe, Far East, North and Central America	
Company D	2002	1	Therapeutics	13	Europe, North and Central America	

Company E	1984	7	Therapeutics		Europe, North and Central America	
Company F	2010	1	Therapeutics		Europe	
Company G	2010	1	Therapeutics		Europe, North America	
Company H	2004	3	Therapeutics	1	Europe, South east Asia	
Company I	2010	2	Therapeutics	4	Asia	
Company J	2008	9	Biotech production	5	Europe, Far East, South Pacific	US (1)
Company K	2005	23	Biotech production	20	Europe, Far East, North and Central America	
Company L	1999	29	Biotech medical technology		Europe, North and Central America, South Pacific	Germany (1); US (1)
Company M	2004	19	Biotech medical technology	41	Europe, North America, Far East	
Company N	2005	20	Biotech medical technology	4	Europe, North and Central America	US (1)
Company O	2002	6	Biotech medical technology	6	Europe, Far East, North and Central America	US (1)
Company P	2006	11	Diagnostics	1	Europe, Far East	Italy (1)
Company Q	2008	0	Therapeutics		Europe	
Company R	2006	29	Therapeutics	6	Europe, Asia, North and South America	US (1)

Note: Geographical diversification represents the geographical regions in which the case firms have partners from those regions in their inter-organizational network ties based on a contractual agreement; for example, a commercial transaction or agreement, a formal collaboration and/or a grant of funding, or a certificate relating to development of the firm.

In order to collect contextual data for the case firms and build the empirical foundations for the entire thesis, a number of non-business actors were interviewed during the same time period that the interviews with the case companies were conducted. Inspecting the state organizations' or industrial associations' websites, as well as utilizing the information from the interviews, led to the selection of these actors. Thus, 10 respondents from six of the non-business actors in the life sciences from the Stockholm region were

interviewed during the same period. Including the preliminary interviews, the study eventually comprised 28 organizations, 30 interviews, and 35 interviewees. The business and non-business organizations interviewed, as well as information about the interviewees, are listed in Table 4.

Table 4. Information about interviewees and the business and non-business organizations interviewed

No.	Organization type	Interviewee(s)' position(s) in the organizations
1	Life science firm	CEO
2	Life science firm	Founding CEO
3	Life science firm	CEO & the board director
4	Life science firm	Founding CEO
5	Life science firm	CEO; Founding CSO
6	Life science firm	CEO
7	Life science firm	CEO & co-founder
8	Life science firm	CEO
9	Life science firm	CEO
10	Life science firm	CEO
11	Life science firm	Founding CEO
12	Life science firm	CEO
13	Life science firm	CEO
14	Life science firm	CEO & co-founder
15	Life science firm	CEO & co-founder
16	Life science firm	CEO
17	Life science firm	CEO; CSO
18	Life science firm	Founding CEO
19	Life science firm	CEO
20	Life science firm	CEO & co-founder
21	Life science firm	CEO & co-founder
22	Life science firm	Founding CEO
23	Cluster organization	CEO; Project manager
24	University technology transfer office	Director
25	Technology transfer/ Incubator	CEO; Chairman
	State innovation agency	Senior advisor

26	Industrial association	CEO; Director of research
27	State advisory and financing agency	Senior advisors
28	Industry consultant	CEO

Note: The list includes preliminary interviews with five business organizations in Istanbul, Turkey interviewed in the first half of 2012 (four life science firms and one industry consultant; rows 1-4, and row 28).

2.6.2 Data collection and preparation

Data collection began with the preliminary interviews in 2012 and continued during the three-year period 2012–2014. In order to place the data and analysis in context, an in-depth background study was completed with respect to the Swedish life science industry. Published reports and analyses, as well as findings from the interviews with non-business actors, have been utilized. While participating in a number of industrial events and seminars during the same period, further insights about the Swedish life science climate were gained from the observational data collected, and this was sufficient for placing the cases in their contexts. Table 5 displays the list of industry events participated in during this period.

Table 5. List of organizers and contents of industry events participated in

No.	Event year	Organizer	Event name
1	2015	Stockholm Corporate Finance & SwedenBIO	Life science/Healthcare Financing
2	2014	Swedish Entrepreneurship Forum	Does Swedish life science have a future?
3	2014	Vinnova	Horizon 2020
4	2014	BioCity Scotland	Life Science in Scotland
5	2014	Vinnova	The Swedish Life Science Industry Report
6	2013	Stockholm Life	
7	2013	Stockholm Business Region	Horizon 2020
8	2013	SwedenBIO	Nobel breakfast

9	2013	Karolinska Institute Science Park	Yearly industry meeting
10	2013	Stockholm Life	KI Science Park Day
11	2012	Stockholm Life	Innovation place: Karolinska International Business in Biotechnology

Data for the case studies was derived from both secondary and primary sources congruently. Secondary data sources included databases, websites, and archival documents, such as news articles and press releases, as well as company annual reports. Primary data sources comprised the interviews.

Secondary data collection and network visualizations

Before visiting the companies, a detailed historical event list of each company was outlined. Data extracted from the secondary sources is listed in Table 6 below. Affärsdata, Retriever Business, Life Science Sweden, and company websites were all used in order to reach the press releases, news articles, and company annual reports for each case company. Thus, they were sources of the archival documents. Orbis was utilized in order to find information about the number of patents granted to each company. Eventually, the EU Cordis Database was utilized to verify each company's participation in European Union- (EU-) funded projects and the information about their project partners received from their archival documents.

Table 6. Secondary data sources

Name	Definition
Affärsdata	A business database providing relevant market information about the companies in Sweden, as well as information retrieved from media
Company Websites	Websites designed and maintained by the companies
EU Cordis	Database for EU Framework project participation
Life Science Sweden	The largest newspaper of the Swedish biotechnology, medical technology, and pharmaceutical sectors
Orbis	A business database that provides comprehensive information on companies worldwide

Retriever Business Media & Retriever Business Analysis	A provider of media monitoring, tools for editorial research, media analysis, and company information. All relevant information is provided from newspapers, magazines, radio, television, websites, and social media.

The event data collected from the secondary sources was coded systematically in accordance with the following steps:

- An overall review of the company websites to obtain a preliminary understanding of the companies' practices, with events conveyed on the websites recorded according to their dates.
- Review of the companies' annual reports to outline major events in their history; recording of events according to their dates.
- Review of the press releases and news articles extracted from the company websites and the databases; recording of events according to their dates.
- Recording of name(s) of the partner(s) if the event involved external party(s) engaged.

The secondary data was utilized firstly in order to map the case firms' individual networks, in addition to its later usage for triangulating the primary data in all the articles. Thus, based on the data collected from the secondary sources, the key actors in each case firm's network were identified through their organizational story prior to the interviews. Network relationships were identified by investigating whether they had been stated in the secondary data material as inter-organizational relationships based on a contractual agreement. These included: commercial relationships (if the relationship between the case company and a network partner referred to in-/out-licensing, sales, supply, distribution, marketing agreements); research relationships (if the relationship between the case company and a network partner referred to co-development, research collaborations, or common project participation); organizational relationship (if the relationship between the case company and a network partner referred to an organizational relationship, such as one with a holding company, mother company, or any subsidiaries); financial relationships (if the relationship between the case company and a network partner referred to holding

shares and any financial investments in the case company); and grants (for example, relationships with EU or Vinnova as a result of research grants or other organizations resulting in awards and grants). At this point, the relationships had not been distinguished by their duration or strength but instead mapped out on a zero–one basis emerging from the presence or absence of a tie. Network partners were categorized into four prominent actor categories: (1) research organizations, (2) business organizations, (3) state organizations, and (4) financial organizations. The categorization of network partners is in line with those designated by the literature (refer to Table 9, Section 3.4). Research organizations comprised domestic or international universities and research institutes. Commercial organizations were classified as domestic or international small and larger life science firms, including large pharmaceutical, biotechnology, and contract research or manufacturing firms, as well as non-life science firms. State organizations were classified as domestic or international government agencies, such as EU Framework programs and state innovation or funding agencies. The financial organizations were domestic or international public and private capital holders, including private investors, private equity and venture capital firms, banks, and pension funds.

Primary data collection and interviews

The interviews entailed speaking with key informants within the firms. The criterion for the key informant selection was each interviewee's involvement in their firm's management. In each case, they were either the founding or the assigned CEOs, and in some there were also additional informants from the management.

The interviews were semi-structured and in-depth. The interview guide utilized was based on insights gained from a review of previous literature and by collecting the contextual data for the study (see Appendix 2 for the interview guide). The guide included broad questions about the firms' histories, internationalizing processes, and present activities, as well as respondents' experiences of the conditions in the local and foreign networks to which they perceived themselves to be connected. When the network visualizations were shown to the respondents, specific emphasis was placed on the network ties of the focal firms.

These extensive questions created further opportunities for timely discussions around topics of specific interest. Open-ended, precise questions were also posed, such as: "What kinds of hurdles did you face while expanding your network internationally?" or "How did you manage to make yourself visible to different actors?". Furthermore, when the respondents mentioned a topic relevant to the study, they were encouraged to continue with follow-up questions, such as "Did your research grant from that specific institution help your firm to be accepted by the actors with whom you'd like to cooperate?" or "Was it the kind of validation you needed to approach the customers you'd like to?". Interviews lasted from one to three hours; all were recorded and transcribed.

2.6.3 Case analysis

In the study, a case replication method was utilized whereby each case served as a distinct experiment (Eisenhardt, 1989; Yin, 1994). What this means is that the data material for each case was compiled and sorted chronologically. Narrative case writings were initiated around the events coded from the secondary data together with the interview material, which provided a great foundation for consistent triangulation of the data. Table 7 summarizes the stories of the 18 cases studied. The case stories yielded insights about each of the case firms' businesses and their international engagements, thereby providing contextual information for the analysis.

Individual case stories were used to conduct within-firm analysis. Material was later coded and labeled around the domain of organizational legitimation. I coded the data relating to "legitimation in networks" if it met one of the following conditions: (1) if any action or event was clearly intended by the firm as contributing to influencing the judgment of any prospective network partner(s); (2) if I considered any action or event as having contributed to influencing the judgment of any prospective network partner(s). I also compared the emergent theoretical constructs and frameworks with extant literature to refine the construct definitions. Once rough constructs and relationships had emerged, cross-case comparisons were made. In addition, procedures suggested by Miles and Huberman (1994) were addressed during analysis, such as tabular displays and graphs in order to analyze and

present the qualitative data (see Article 3 and 4 for more detailed case analysis descriptions).

Table 7. Case descriptions and condensed case stories

Case Name	Case Summaries
Company A	The innovation that the business idea was initiated upon came from the founder's academic work at a Swedish university. The company is developing a product for improving drug and vaccine delivery systems. The company has progressed with product development by participating in EU-funded projects. It has achieved positive results from clinical trials. The firm is currently at the evaluation phase of their product by a number of multinational corporations for out-licensing agreements.
Company B	The innovation that the business idea was initiated upon was patented from a US company that one of the founders used to work for. The company has two projects in the pipeline where they work in collaboration with a number of Swedish and international public and private organizations. They utilize grants through collaborations with Swedish universities for clinical trials of two projects, both of which are in clinical Phase II.
Company C	The innovation that the business idea was initiated upon came from one of the founder's renowned innovation and academic work at a Swedish university. The company received funding from two Swedish life science portfolio companies. They also got a grant from the governmental research organization in Sweden. The research agreement they had with a Japanese multinational company later turned into a licensing agreement. The company also currently works on one other drug project based on their technology platform, in close research collaboration with Swedish and international universities as well as research and manufacturing contract organizations.
Company D	The innovation that the business idea was initiated upon came from two founders' academic work at a Swedish university. The company developed their product through EU-funded projects until the proof of concept stage. The company made an option agreement with an international company for the preclinical and Phase I trials. They work with Swedish and international universities and research and manufacturing contract organizations.

Company E	The innovation that the business idea was initiated upon was patented from a US university. The company carried its product until clinical Phase III and signed a licensing agreement with a US-based multinational pharmaceutical corporation. However, the company reported that its European Phase III study did not show a statistically significant preservation; thus, it closed down further studies as well as parallel US studies. The company is currently working on combination therapies for the same target therapy, which are at Swedish Phase II stages in close research collaboration with Swedish universities and institutes, and international universities and research and manufacturing contract organizations.
Company F	The innovation that the business idea was initiated upon came from academic work at a Swedish university. The company was founded as a sister company of a small life science diagnostic firm with the aim of utilizing the same compounds for development of a drug project. Company F is currently at the late preclinical stage and is working with Swedish and international universities and research and manufacturing contract organizations.
Company G	The innovation that the business idea was initiated upon was patented by a Danish company. Preclinical studies have been completed for the first drug candidate and are currently at the stage of clinical trial. Company G is working mostly with international universities and research and manufacturing contract organizations.
Company H	The innovation that the business idea was initiated upon was a result of research collaboration between industry and academia in Sweden. The drug development for one of the target therapies is in Phase II clinical studies. Studies are being conducted in Thailand in collaboration with an international research group, mostly emanating from a university in Bangkok, Thailand and Oxford, UK. The company's other drug project is ready to enter Phase II clinical studies. Hence, the company has signed a co-development agreement with a drug development company in the UK. Company H also works with Swedish and international research and manufacturing contract organizations.
Company I	The innovation that the business idea was initiated upon was the founder's academic work at a Swedish university. The company was founded as a sister company of a small life science firm with the aim of utilizing the same technological platform for another target. It is involved in preclinical activities in order to take the project to the proof of concept stage, working mostly with international research and manufacturing contract organizations.
Company J	The business idea was initiated upon one of the co-founders' renowned innovations and academic work at a Swedish university. Before even starting the formal company, its first international sales deal was made with a multinational pharmaceutical corporation. The company developed its products, and sells and markets them, all around the world through direct export. Company J also has distributors in Australia, France, Japan, New Zealand, Singapore, South Korea, and Taiwan. Recently, the company signed a contract manufacturing agreement with a US-based firm.

Company K	The business idea was initiated upon a public research project that is collaboration between several Swedish universities. The project is led by one of the co-founders of Company K. The company started selling to foreign markets on day one through direct exports. It signed a distribution agreement for its products with a global industrial supplier. It also uses regional distributors. Lately, Company K has changed its strategy to concentrate more on direct sales.
Company L	The innovation that the business idea was initiated upon came from the founder's PhD studies at a Swedish university. Company L signed a global distributor agreement soon after its inception. Later, with growing sales volumes, the distribution agreement was replaced by strategies that engage the company to a larger extent in international business. The company has set up its own subsidiaries in Europe and the US, and also sells through regional distributor agreements.
Company M	Company M is developing a portfolio of drug projects based on its novel technology platform developed as a result of joint research efforts from two Swedish universities. The company signed a licensing agreement with a multinational life science firm from the start. It initiated close collaboration with universities locally and internationally. It has also been involved in a large EU project. Today, the company has several license and collaboration agreements with several mid- to large-sized multinational firms and works with Swedish and international research and manufacturing contract organizations.
Company N	The innovation that the business idea was initiated upon came from the founder's PhD studies at a Swedish university. The innovation was awarded a number of grants and prizes within Sweden and has received great international recognition. Technology development proceeded and the company's products and services were developed mostly through support from EU grants and by participating in research projects. The company initially signed licensing agreements with two multinational corporations for one of its technology platforms. The company now has customers for its services from more than 50 countries. It currently works on further technology developments and several product projects.
Company O	The innovation that the business idea was initiated upon came from the founder's PhD studies at a Swedish university. The company started almost from inception to expand to foreign markets, and sold its systems in UK, Germany, Switzerland, and the US. Soon after, Company O started a US subsidiary. It implemented a global distributor agreement; however, the agreement has been cancelled as the company decided to concentrate on direct sales instead. During that time it has been involved in four EU-funded projects.
Company P	Company P initiated its business idea based on the founders' experience in the industry. After it validated the technical features of its first product through one international customer, the company started to develop an international customer base, mostly within Europe. However, it operates in more than 30 countries around the world through direct export and distributors.

Company Q	Company Q initiated its business idea based on the founders' experience in the industry. International sales started directly from foundation, first to Norway and later to other European countries through sales agents and direct exports.
Company R	The business idea was initiated based on a scientist's academic work at a Swedish university. The business idea was based on utilizing new formulations of already validated molecules and targeting new therapies. The results of the clinical studies achieved positive results. The company currently holds a subsidiary in the US, and has sales in Europe, Africa, Asia, and Australia through international partners.

Chapter 3

Empirical Foundations

A typical life science firm, although depending on its role in the overall value system, often emerges from an R&D process from which one or more technologies are commercialized. Furthermore, specific to the life science industry, the process of taking a technological innovation from the laboratory to the market often requires a wide range of specialized knowledge and the involvement of several or many firms and organizations (Jones, Wheeler, & Dimitratos, 2011).

When it comes to the flow of a life science product from laboratory to market, we can include at least three stages (Mehta, 2008). Typically these would be: (1) the discovery and preclinical trials stage involving the development of a product concept, specifications and design, and animal testing; (2) human clinical trials; and (3) manufacturing, marketing, and sales. A firm might not execute all these stages itself; however, its own value chain might still be "embedded in a larger stream of activities within the value system of the industry" (Hine & Kapeleris, 2006: 184). This value system or network may extend across several organizations and countries, with key stages in the innovation process of any product being outsourced to global locations (Jones et al., 2011).

Small companies or start-ups, often referred as innovator firms, generally focus on the first stage in the value system; so, for example, drug discovery companies often focus on R&D so that they may, over time, ideally become fully integrated pharmaceutical companies – as in the case companies A, B, C, D, E, F, G, H, and I in this study. However in practice, it is

more common that cash-strapped small firms, if successful, tend to be acquired by large pharmaceutical and medical device companies after the preclinical studies stage, or enter into new collaborative ventures and alliances. On the other hand, innovator firms with "platform" technologies generally concentrate on a specialized part of the value system but extend their products or services horizontally across a range of product applications, companies, or industries (Jones et al., 2011). In this study, case companies, J, K, L, M, N, O, P, Q, and R represent this sort of business by providing diagnostics, consumables, and bio and medical technologies that serve different stages of the life science value chain.

Accordingly, life science is an industry best described as a complex amalgamation of interconnected sectors comprising a diverse range of knowledge-intensive and often highly specialized firms (Jones et al., 2011, p. 3).

3.1 The rules of the global play: Scratching the surface

Globalization is a widely recognized transformation process in our era in which the world is progressively becoming a network that is connected by visible ties of resources and products, as well as by invisible ties of ideas and norms. There is also evidence of what researchers call the "born global" effect, which describes the idea that more than half the population of entrepreneurs in developed countries, and around a third in developing countries, go into business with plans to attract at least some income from overseas (Bosma & Levie, 2010). Thus, a reciprocal relationship between globalization per se and business organizations exists, where organizations are to a large extent facilitators of globalization and on the other hand remarkable carriers of its effects (Parker, 1998). A few of the most important reflections of this process from a company perspective might be stated as the ability to move flexibly, to identify and exploit opportunities anywhere in the world, to source inputs and distribute products and services across borders, and to maintain a presence (usually as parts of alliances or networks) in a number of different countries (Nummela, 2004, p. 129).

In light of these enabling conditions, one might think that start-ups, particularly in technology-based industries, such as life science, considering the generally accepted universal nature and relative cultural insensitivity of technology, are natural candidates for global expansion. However, upon closer inspection, one might also realize that the same global conditions are full of hurdles that plague high-tech start-ups. A life science product and the organization developing it are often better off gaining global technological and market validity and acceptance – otherwise it is likely to gain none, even from its home market. As an example, a Turkish beer brand may have more success marketing in Turkey than a life science start-up would marketing a Turkish stem cell culture. The reason for this is that the stem cell purchasers in Turkey might find it far more difficult to justify their decision not to buy a high-technology product from a globally established technology source, such as GE Healthcare, for example, without demonstrating that the local start-up's technology has worked successfully in the US or Germany (examples adapted from K@W, 2009). Thus, the global competitive domain of the life science industry might put pressure on start-ups to effectively operate in major world markets, meaning a company cannot afford to remain local. Consequently, life science start-ups can be considered as being "born into a global market" (Jones, Vlachos, Wheeler, & Dimitratos, 2008) as the rules of the game might generally be set within an international, if not global, scope.

3.2 Life science industry: The present conditions

The global life science industry generated total revenues in excess of $1.1 trillion in 2011, representing a compound annual growth rate of 6.7 percent between 2007 and 2011 (Deloitte, 2013). Following years of growth and favorable market trends, the global life sciences industry has lately been exposed to a number of critical challenges alongside potential opportunities (PWC, 2012). The opportunities that have fueled the industry's ongoing growth and favorability include the aging population, rising incidence of chronic diseases, opportunities in emerging markets, and technological advancements in areas such as biotechnology and the handling of "big data". On the other hand, the major challenges the industry is facing comprise

expiration of patents, competition from generic products, price pressure in the market, generally heightened regulatory activity, and increasing development costs and decreasing R&D productivity (Deloitte, 2013). Another challenge impacting the industry involves the political debates in many countries about who should pay for healthcare and how bioscience and the development of drugs and treatments should be funded (Jones et al., 2011). The main conclusion from these debates is usually price cuts for life science products as a result of several governments' successive attempts to control general spending on health care (Deloitte, 2013). Accordingly, a number of trends have been distinguished in order to overcome these challenges and to protect profitability in the industry. One major trend has been influenced by product development strategies that focus on the emergence of new technologies, including genomics, proteomics, and recombinant DNA technologies; and consequently filling the drug development pipelines with projects developed by smaller drug development companies (SULS, 2014; Vinnova, 2014).

Today, even the largest companies have to collaborate with other organizations to develop effective new medicines or medical devices more economically. Moreover, they may have to step far outside the sector to find some of the partners they need to bring these products to market. Exploring new ways of collaborating with other companies and academia is thus another global trend in the industry in addition to the need for extensive intra-industry collaboration. There is no commonly accepted terminology to capture the range of ongoing experiments in how organizations in the life sciences access and use knowledge resources. However the term that is most familiar is "open" (OECD, 2012). There are also several examples of open innovation models, such as the Innovative Medicines Initiative (IMI), a joint undertaking between the EU and the pharmaceutical industry association EFPIA, whereby public and private funds co-finance the early, pre-commercial stages of drug development (OECD, 2012; SULS, 2014).

3.3 Life science industry: The global and local landscape

In geographical terms, the life science industry is scattered around the globe, albeit with strong research-based centers in a small number of countries. The US has the highest number of companies at 2000 firms, while the EU hosts 3000 firms in total (Ernst & Young, 2015). Furthermore, the rapid diffusion of technological advancements in countries outside Europe and North America, led by China, is causing a major rebalancing of the global research system in a process that has only just started and is certain to continue (Vinnova, 2014). As for revenues, the US again accounts for the largest share of the global market, representing 46 percent of revenues. The same is true for innovation, as North America continues to be the dominant contributor of life sciences Patent Cooperation Treaty applications, followed by Western Europe, with an increasing share from Asia and Latin America (NIH, National Science Board, 2012). Therefore, in the industry, North America is commonly referred to as the global "lead market" in terms of both size and sophistication. For most life science products, the primary foreign-country market typically denotes the US. For example, it is common practice in the industry to apply for patents for innovations in the US market first (Vinnova, 2003). However, this is not always the case. For instance, for a niche product targeted that is towards Europe, the lead market might refer to Germany or the UK.

Furthermore, life science companies are increasingly targeting emerging markets, such as China, India, and Brazil, to supplement sales in the US and Europe, and represent 20 percent of the global shares (Deloitte, 2013). As for research and science, the core knowledge base of the industry's new ventures in particular is even more globally dispersed. A recent report by Vinnova (2013) on the global connectivity of research shows that while intra-regional cooperation is an important phenomenon in Europe, for Europe as a whole, internationally co-authored articles that include authors from outside Europe are twice as common as articles co-authored by European authors alone. Hence, the life science industry today can be described as a global networked arrangement consisting of large, well-

established multinational organizations in dominant positions in the industry globally, and an extremely large and varied range of biomedical, drug, diagnostic, device, and service companies that are involved in the various stages of research, development, technology, transfer, and commercialization (Jones et al., 2011). In addition to business organizations, the prevalent actors in the industry further consist of academia and public and private capital, as well as governments and regulators.

Sweden, despite the small size of its market, has a strong position on the global life science map due to its well-advanced science and technology fields and established institutions. Sweden was recently chosen as the innovation leader for the third time in a row among EU member states (EU, 2013). Sweden has a high ranking for participation in EU framework programs and ranks fifth in terms of funding received from IMI (Vinnova, 2014). However, although the indicators point to Swedish life sciences' strengths, such as the high rates of new company formation and the world-class research and knowledge-building structure, growth rates of Swedish firms have been identified as the lowest compared other leading countries in innovation. The market has been identified primarily by the insufficient and unsustained stream of financing, especially for the later stages of firms (Eurobarometer, 2010), thus making the competition for funding very high. The other challenges worth mentioning compared to other players on the international market can be listed as less leadership in commercializing research and the fragmented nature of capital, research, and business communities (Eurobarometer, 2010). Most of the inventions in the Swedish market are oriented towards international markets. One sign of this is the rate of inventions in the field being specified to be generally protected for intellectual rights on the large US market (Vinnova, 2003).

Sweden, according to Vinnova's (2014) latest industry report, hosts 791 companies that are active in research and development, product development, consulting, or manufacturing. Sixty-four firms of this population are medium-sized companies with 50–249 employees, 178 are small companies with 10–49 employees, and 256 are micro firms with 1–9 employees. Stockholm, together with Uppsala and Södermanland, comprise 50 percent of employment in the industry (Vinnova, 2014). The area also accommodates three important universities as sources of life science basic research:

Karolinska Institute, the Royal Institute of Technology, and Stockholm University. The region also includes large national research agencies, as well as venture capital investment companies (SULS, 2014).

3.4 Studying the small life science firm's focal network

Being the drivers of innovation, small firms are important to the industry globally as independent innovators, as partners to other firms, and as targets for acquisitions. Central to the nature of the innovation and commercialization processes, life science firms, usually from day one, are connected with different actors at the local, regional, and global levels (Nummela & Nurminen, 2011). Thus, the pressure to generate innovations, and the attitude towards networking, are among the key features of the industry (Lim, Garnsey, & Greagory, 2006; Owen-Smith & Powell, 2001). Based on the previous literature and industrial reports reviewed, a number of actor categories are identified that hold prominent places in small life science firms' networks. Although all these actors have roles appointed by contracts, they are also usually highlighted for their role of signaling specific features of the small life science firms to the others. The actor groups and their network roles are summarized in Table 8.

Table 8. Actor groups in life science and their roles relating to small life science firms

Actor groups	**Roles relating to the small life science firms**
Research organizations (Academia)	This category embodies universities and non-profit research organizations in roles as customers and R&D collaborators. These actors are generally sources of research and innovation; however, at the same time, they provide validation in terms of the focal firms' technology (George, Zahra, & Wood, 2002; Perez & Sanchez, 2003; Stuart, Ozdemir, & Ding, 2007; Zucker, Darby, & Armstrong, 2002;).

Large multinational firms	Large multinational pharmaceutical and medical technology companies are in the roles of customers and strategic alliance partners through licensing and technology development agreements. The goal of larger firms to have licensing agreements with innovator firms is to diversify their pipelines with, for example, high-margin biologics, which are less exposed to competition compared to prescription drugs (Deloitte, 2013). Such companies have valuable resources that can help young firms to bring their core technology, product, and/or service to market, such as validation for its market value (Baum & Silverman, 2004; Coombs & Deeds, 2000; Deeds, DeCarolis, & Coombs, 2002; Higgins & Gulati, 2003; Pisano, 1991). Small life science firms have a special relation to Big Pharma and the local and global juxtaposition that characterizes their inter-relationships and competitive postures in the industry (Jones et al., 2011).
Other small life science firms	These are generally in customer and service provider roles. They might be firms that manufacture a complementary product, as well as providing contract research and manufacturing services and at the same time signaling the focal firm's market presence (Higgins & Gulati, 2003; Nummela & Nurminen, 2011).
Financiers (Public and private capital)	Investors in young innovative companies are generally represented by venture capitalists and business angels (Vinnova, 2014). They are important sources for life science companies as financiers.
State organizations	These organizations are in regulatory roles; however, at the same time they comprise a support role for life science firms. State organizations generally include national or regional institutional organizations, such as National Institutes of Health, Vinnova, or the EU. Their role is funding small life science firms in terms of grants. In addition, they are acknowledged for their role as enhancing legitimacy of the focal firm in terms of technology.

3.5 Empirical limitations

Life science is one notable representative of the growing number of technology-based industries, and is distinguished by the breakneck pace of technical advance necessary to develop their products (Powell, White, Koput, & Owen-Smith, 2005). Networks, on the other hand, have already been proven as a prominent means of organizing in this industry that entails the employment of a diversity of skills and resources (Powell et al., 1996). Thus, the globally dispersed center of excellence for the sector's knowledge base, as well as the global demand for products, makes the market for life science global and a suitable empirical basis for the purpose of

this study. However, the industry also has many idiosyncrasies that might create limitations for the study.

For instance, in information services, a company like Google might be exemplified as a firm that grew into a global company in a few years and replaced established competitors. However, in the life science industry, new companies pursue a path of evolving into specialized partners of established "big pharma", rather than replacing them. The means to becoming an established big pharma player is extremely costly and sophisticated. Hence, the roles attributed to the different sizes of organizations, as well as business segments in the global life science value chain, are perceived to be more interconnected for this industry.

Furthermore, one idiosyncrasy is the high-level risk associated with the industry. Research programs are expensive to run and have a high failure rate (Coombs & Deeds, 2000; Nummela & Nurminen, 2011). Although life science start-ups in general have to provide much technical evidence and comply with numerous regulatory schemes that are specific to the industry, it is barely sufficient by itself to base all the business decisions. In most cases, there exist many different applications of the new start-ups' innovations, and which ones the market will prefer cannot be predicted with any certainty. The projects are costly and an investor, a R&D collaborator, or a licensing partner does not know if a project will achieve its intended result, and cannot predict how potential customers will value and use these results. It is not possible, even in principle, to calculate the probability of success. Thus, these conditions make it difficult for the evaluators, specifically in the life science industry, to predict the future performance of firms (Vinnova, 2014). Furthermore, these firms need external support from the very early stages and thus should be evaluated when they can provide neither a formal proof of concept nor any previous performance records in general. Therefore, informal structures of evaluation such as networks might be highlighted more for the cases studied, compared to the average needs of any other industry.

Chapter 4

Theoretical Foundations

This chapter presents the theoretical foundations of the dissertation's principal arguments, which have their roots in institutional theory and organizational legitimation literatures. The chapter subsequently presents an overview of internationalization theories. This broad theoretical layout provides an opportunity to interlink the findings of the study that is designed based on an institutional rationale later to the internationalization literature.

4.1 Organizational legitimation

Organizational legitimation has served as a broadly acknowledged theoretical apparatus in institutional analysis, and has led to a rich body of research that views legitimation as key to understanding new venture emergence and growth. How legitimation is defined conceptually in individual studies varies primarily around a number of central analytical choices (Deephouse & Suchman, 2008). These are perspectives on legitimation, definition of the audience, and the organizational features that are subject to legitimation. Therefore, the theory is presented first by elaborating on these variances. Eventually, a more unified view of legitimation dimensions is displayed.

4.1.1 Dimensions of legitimation

Perspectives

One of the main dichotomies of legitimation has taken place between two perspectives, referred to as audience and actor-centered perspectives (see Suchman, 1995). The main assumptions about the extent of managerial control over the process underlie the fundamental diversity in the approaches. Studies that have identified legitimation by solely conforming to prevailing societal norms and categories are mostly recognized as falling into the former category (e.g., Scott, 1995). Thus, in this understanding, as managers of firms are embedded in social structures, their perceptions, decisions, and actions are also expected to be rendered by the belief systems surrounding them. These studies have generally focused on the macro level legitimating mechanisms, such as supraorganizational beliefs located in a market, country, industry, etc. Thus, legitimacy is achieved when an indicator of legitimacy is present at the macro level; for example, a high appearance in national media. Together, the macro-level views have generally assumed that legitimation operates "top-down", and that the micro units that add up to a given macro unit are relatively homogenous (e.g., Carroll & Hannan, 1989). Accordingly, legitimation is considered to occur mostly as audience-centered, and does not take the role of the individual organizations or the role of the interactions in local situations into account.

Studies that have taken legitimation as a process involving influences by management's purposeful practices in order to help organizations achieve their goals fall under the latter group in the duality of the dominant perspectives (e.g., Ashforth & Gibbs, 1990; Dowling & Pfeffer, 1975). These studies have generally taken a micro-level analytical perspective that views the micro units that add up to a given macro unit as relatively heterogeneous (e.g., Khaire, 2010; Zott & Huy, 2007). Hence, micro views focus more on explaining how individual organizations themselves can contribute to organizational legitimation by purposefully seeking legitimacy.

Audiences

In the legitimacy literature, the audience and the possible sources of legitimation are not restricted to any one set of gatekeepers. Hence, whether a

new venture is considered "legitimate" is a matter of the audiences that the researcher chooses to concentrate on. Audiences broadly refer to those "who have the capacity to mobilize and confront" the venture (Deephouse & Suchman, 2008, p. 54). Many legitimacy researchers have treated the society at large or, more specifically, the institutional environment or organizational field in which the organization is operating, as the boundaries of the audience (e.g., DiMaggio & Powell, 1983; Meyer & Rowan, 1977). On the other hand, there are also more fine-grained descriptions of the audience. These include potential and actual resource-holders (investors, consumers, staff, etc.), other industry participants (e.g., Aldrich & Fiol, 1994), regulators and certification authorities (e.g., Sine, David, & Mitsuhashi, 2007), and the media (Pollock & Rindova, 2003).

Organizational features subject to legitimation

Features of firms that are subject to audiences' evaluations vary widely in the literature. They include a firm's structures and policies (e.g., Meyer & Rowan, 1977); the founder and the top management (e.g., Packalen, 2007); the type of industry or sector (e.g., Baum & Oliver, 1991); and the quality of the firm's organizational relationships (Stuart, Hoang, & Hybels, 1999). However, for young, small firms, organizational relationships have been highlighted specifically as the prior accomplishments of these firms are rarely adequate to resolve others' uncertainty about it, and the identities of actors in such firms' networks are likely to significantly influence evaluators' perceptions (Stuart et al., 1999). The idea advocated by these scholars is that a focal firm is likely to be perceived as legitimate by evaluators if it holds a relationship with legitimate organizations due to legitimacy spillovers of network partners' attributes, such as membership in a network (Haack, Pfarrer, & Scherer, 2014; Rao, 1994). Previous studies have provided empirical support for this claim by highlighting the relationship between organizations with certain actors, and their enhanced resource access and survival, as indicators for the presence of legitimacy (Baum & Oliver, 1991).

Firms as subjects of legitimation in a relational context, and, through a broader lens, in a network setting, will be elaborated on further in the next chapter. However, when it comes to small life science firms, the subject of assessment is considered two-fold; that is, an organization's scientific and

business attributes (Rao, Chandi, & Prabhu, 2008; Higgins & Gulati, 2003). Scientific attributes refer to firms conveying to their prospective network partners that they understand and can work with the latest scientific ideas in the field. Business attributes denote that they are expected to be capable of competitively operating in the market.

4.1.2 Legitimation: Multi-level and multi-stage

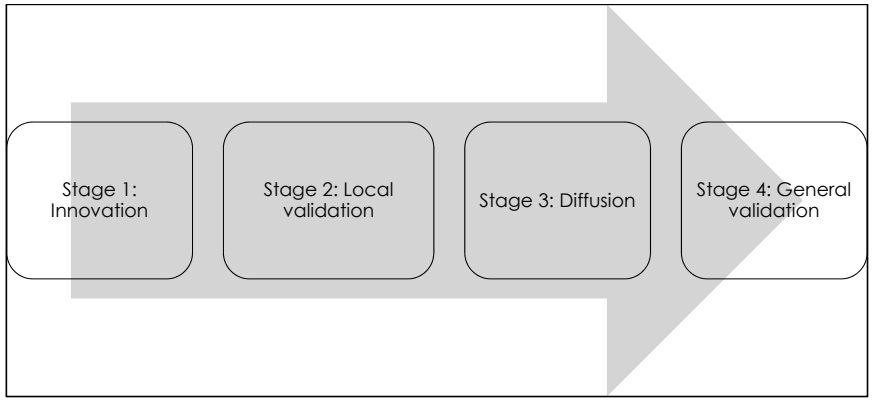
With growing interest among institutional theorists to explore the micro-foundations of institutions, recent studies have called for a multi-level conceptualization of institutional processes (Jepperson, 1991; Powell & Colyvas, 2008). From a multi-level perspective, the sources of cognitive legitimacy in a macro social environment are addressed as emanating from the prevalent collective cognitive frames. In this manner, the legitimacy sources in essence are not the individual actors per se, but are located in widely held supraorganizational beliefs about social reality and appropriateness (Ridgeway & Berger, 1986; Suchman, 1995). However, at the micro-level, the legitimacy judgment is mediated by the perceptions and the behaviors of individual actors. Hence, the focal actor and the audiences both test and redefine these prevailing supraorganizational institutions through ongoing interactions with other social actors (Baum & Oliver, 1991), and base their behaviors and decisions in specific local situations. Accordingly, legitimation, understood as the process of attaining legitimacy, simultaneously runs at micro-level interactions as a certain audience develops expectations about what a focal organization can or should do. Thus, legitimation of a focal firm moves along a process of individual and collective validations by audiences (Bitektine & Haack, 2015).

More recent developments in sociology have conceptualized cognitive frames not as a normative imperative that forces conformity to societal expectations, but as a flexible set of tools that can be actively and strategically created and deployed as actors strive to make sense of the world (e.g., Swidler, 1986). The focal organization is accordingly evaluated, where it also finds the chance to observe and make sense of the authorizations and endorsement mechanisms and thus to display its fit to these expectations in order to enhance its legitimacy process. Thanks to a growing number of empirical and conceptual studies that follow this understanding, we now

know a great deal about the practices that organizations generally employ with this purpose (e.g., Lounsbury & Glynn, 2001; Zimmerman & Zeitz, 2002; Zott & Huy, 2007). For example, among the cognitive legitimation practices highlighted by previous studies is the hiring of top managers and personnel with desirable education and credentials (Nagy, Pollack, Rutherford, & Lohrke, 2012), selecting network partners that will enhance legitimation by association (Zettining & Benson-Rea, 2008), and using oral and written presentations to create stories that help firms to generate identities that belong to present cognitive schemes (Creed, Scully, & Austin, 2002).

One notable presentation of a fine-grained definition of a subjective and a micro-account of the social construction of legitimation in the organizational institutional theory is the multi-stage legitimation model developed by Johnson, Dowd, and Ridgeway (2006). The model shows that a social object such as a new organization is eventually taken as legitimate by a collective group if it is in consonance with their generally shared norms, values, beliefs, and practices. Johnson et al. suggested four stages of legitimation: (1) innovation, (2) local validation, (3) diffusion, and (4) general validation. The innovation stage involves the emergence of a social object, such as a new organization that encounters a need for addressing legitimacy. The second stage involves validation of the organization by local social actors who justify and accept the fundamental features of it in accordance with the dominant prevailing institutions. Third, once local validation occurs, diffusion to new contexts arises through implied acceptance by various social actors who view it as valid. Fourth, a broader-level consensus occurs once the social object has been validated, diffused, and accepted in multiple situations. Thus, the model mainly shows a diffusion process that comprises both individual and collective levels of validation. Figure 2 displays the sequential stages of legitimation as a social process.

Figure 2. The organizational legitimation process



Adapted from Johnson et al. (2006)

4.2 Internationalization of small firms and networks

In the contemporary business literature, internationalization of small technology firms has been increasingly related to studies of firms labeled as "international new ventures" (INVs) (Oviatt & McDougall, 1994), "born-globals", and "global start-ups" (Knight & Cavusgil 1996; Madsen & Servais, 1997), which have all begun to congregate under the emerging research stream "international entrepreneurship" (IE) (Zahra, 2005). Therefore, the presentation of internationalization theories is primarily conducted with the IE field at the center.

4.2.1 Internationalization theories and international entrepreneurship

There are a number of schools of thought about what constitutes internationalization. One of the most prominent entails theoretical explanations of a firm's internationalizing process have comprised mainly economic approaches with a focus on transaction cost theory (Williamson, 1975; for a review, see Dunning, 2009). On the other hand, behavioral internationaliza-

tion process theories have shifted their focus from cost and risk calculations of internationalization, and advocated considering it as a gradual behavioral process where this time, knowledge, and learning is at the center (e.g., Bilkey & Tesar, 1977; Cavusgil, 1988; Johanson & Wiedersheim-Paul, 1975). Process models can be divided into two categories: the Uppsala model (e.g., Johanson & Vahlne, 1977) and those models often referred as innovation-related internationalization models (e.g., Bilkey & Tesar, 1977; Cavusgil, 1984; Reid, 1981). The common constituent of both models is addressed as the incremental nature of internationalization processes, first in terms of activities, and second in terms of resources (Ruzzier, Hisrich, & Antoncic, 2006). There is consensus about the great contributions of the models to current understanding of the drivers and patterns of internationalization, and they are widely used in both large- and small-firm contexts.

However, behavioral process models were also challenged in the mid-to-late 1980s by the results of empirical studies conducted in relation to high-technology start-ups. These studies revealed that these firms do not necessarily follow an incremental route (Oviatt & McDougall, 1994; Schweizer, Vahlne, & Johanson, 2010). While explaining the reasons for this variance, scholars increasingly brought up an additional driver that had not been sufficiently highlighted in former process models (Reid, 1983); that is, the prospect of a firm's international expansion occurring as the outcome of its strategic intentions. As a result, entrepreneurial and strategic management perspectives emerged in the internationalization paradigm that view internationalizing small firms mostly as start-ups that constantly endeavor to create enabling conditions for international venturing and growth (Crick & Jones, 2000; Oviatt & McDougall, 1994).

In this context, small life science firms have attracted the specific attention of internationalization and IE scholars (e.g., Brännback, Carsrud, & Renko, 2007; Gassmann & Keupp, 2007; Jones, Wheeler, & Dimitratos, 2011; Lindstrand, Melén, & Nordman, 2011; Nordman & Melén, 2008; Tolstoy & Agndal, 2010). Due to the particularities of the life science industry, many scholars have chosen to study the internationalization of small life science firms within the context of the industry's own characteristic conditions (Laurell, 2015). A body of studies that pointed out the key to understanding the overall growth path of life science firms in its industry

specific conditions is to be found embedded in a holistic view that comprises internationalization, innovation, and entrepreneurship perspectives (Jones, 1998, 1999; Jones et al., 2011; Phiri, Jones, & Wheeler, 2004). In this view, innovation and internationalization, as explained above, are considered to occur either instantaneously or with the latter in close succession to the former, although mostly in an inter-related manner (Onetti, Zuchella, Jones, & McDougall-Covin, 2012). Thus, entrepreneurship is linked to both innovation and internationalization by exploring and exploiting international opportunities, which leverage both local and international relationships (Schweizer et al., 2010). Leveraging relationships, on the other hand, refers to giving access to resources and new knowledge that enables further relationship development and improved positions in a network of relationships (Johanson & Vahlne, 2009; Jones et al., 2011; Tolstoy, 2010).

4.2.2 Network approach to internationalization

The network views on internationalization draw broadly on the theories of social exchange and resource dependency, and focus on firm behavior in the context of a network of interorganizational and interpersonal relationships (Axelsson & Easton, 1992). A business relationship refers to the interaction and resource exchange between the firm and other actors (Gadde & Mattsson, 1987). In this view, the focal network of a single firm consists of the firm's exchange relationships with different actors in the firm's environment, such as its customers, distributors, suppliers, competitors, and the government (Chetty & Blankenburg Holm, 2000). A dyadic business relationship and a firm's entire focal network are directly or indirectly connected with other relationships that have some influence on them, as part of a larger business network (or networks).

Networks, and the benefits they provide, have comprised the fundamentals of IE research as well (see review by Jones, Coviello, & Tang, 2011). This prominent network influence in IE studies started with two early papers by Coviello and Munro (1995, 1997). In these studies, networks were themselves addressed as the drivers of internationalization. Furthermore, Johanson and Vahlne (2009) revisited their Uppsala model of internationalization from 1977, adopting an industrial network perspective and describing internationalization as a multilateral network development

process in larger business network structures in which the firm is embedded.

Overall, one of the prominent roles of networks in small firm internationalization and IE studies is acknowledged as providing resources and that might compensate for small firms' inherent resource scarcity and make internationalization possible (Sharma & Blomstermo, 2003; Young, Dimitratos, & Dana, 2003; Melen & Rovira, 2008). Furthermore, networks provide structures for creating critical resources and capabilities with other actors that are hard to create alone (Mort and Weerawardena, 2006; Tolstoy & Agndal, 2010). Hence, the understanding is that different relationships provide different resources and capabilities. The main assumption in many network studies is that managers of these firms use resources and existing personal or social networks (Oviatt & McDougall, 1994). Furthermore, scholars have also increasingly started to highlight the dynamics of networks in relation to successful internationalization (Coviello, 2006; Lindstrand, 2011). However, IE literature does not seem to have approached networks from a legitimation perspective, except for a few studies. For example, Al-Laham and Souitaris (2008), in their study of biotechnology firms in Germany, found evidence that firms with more central positions in the national network, and allied with better connected partners, have a higher probability of forming international alliances as they signal legitimacy and trustworthiness, which encourages a favorable evaluation by potential foreign partners.

4.3 Summary of the theory

This chapter provided the study's theoretical foundations in the organizational legitimation and IE theories. Theory of organizational legitimation is discussed as a multi-level and multi-stage process model. Focal firms' networks of relationships were stressed to play a significant role for the micro-level legitimation process because theory points out network relationships as an organizational feature that is at first subject to legitimation for young firms. On the other hand, theory has provided relatively little knowledge about the role of focal firms' network relationships with different actors

and the implications of focal network dynamics on their legitimation; about which this dissertation aims to bring in new insights.

IE theory provided the study with a picture in which there is a degree of agency to international expansion of small firms. Thus, firms proactively seek opportunities and resources across borders for realizing their goals – such as, in this study, exploiting life science technologies in a global market. Networks also play a significant role for IE theoretical frame in that they provide resources that are not available in-house, as well as structures for generating new capabilities and resources that would not be possible otherwise. Consistent with this view, IE research has highlighted understanding of the network relationships with different types of actors and dynamics in the firm's focal networks as keys to successful international expansion. However, given the strong emphasis on networks in the current IE paradigm, the question of how firms establish new relationships and connect to desired networks seems not sufficiently addressed. This study assumes that by providing insights about firms' legitimation within international networks, this dissertation may contribute filling in this void.

Chapter 5

Analytical Framework

The main purpose of this study is to develop a deeper understanding of small life science firms' legitimation in international networks. The purpose originates from the assumption that a life science start-up realizes its international expansion in close relation to its legitimation in international networks. Consistent with this view, this chapter develops and presents an analytical framework in light of the theoretical foundations discussed in the previous chapter. The goal of the chapter is to consider the presented theory in the case of small life science firms, and to develop an analytical lens on small firm legitimation in international networks.

5.1 Legitimation of small life science firms

A life science start-up that is founded to exploit one or more technologies in a global market accordingly aims to become a legitimate global actor in international networks. In the legitimation model by Johnson, Dowd, and Ridgeway (2006), legitimation starts with the innovation of a social object and continues until general validation occurs once the social object has been validated, diffused, and accepted in multiple situations. Cognitive legitimacy stems from knowledge about the organization representing the more or less "taken-for-grantedness" according to the cognitive understandings that give meaning to social exchange in the market (Aldrich & Fiol, 1994; Greenwood, Oliver, Sahlin, & Suddaby, 2008, p. 4). Thus, global legitimation for a small life science firm is considered complete when the

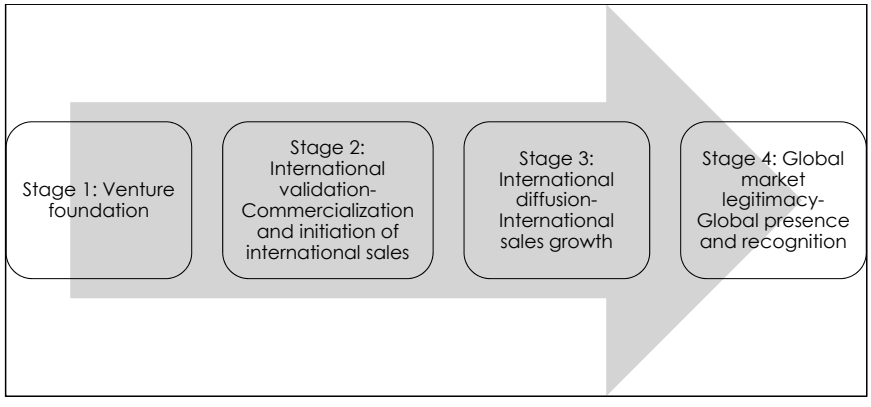
firm and its role are recognized and acknowledged globally. For example, previous literature has suggested that being traded on the NASDAQ exchange is one practical measure that can be a proxy for global presence and recognition of a life science company. Presumably, NASDAQ trading reflects a non-US technology company's ability to break through regional barriers and gain broad international recognition (K@V, 2009). Achieving this state of cognitive legitimacy is very difficult, and for some firms may not be possible or even an aim, depending on the firms' business models and strategies. In the life science industry, it is frequently the case that cash-strapped small firms, if successful, are acquired by global pharmaceutical and medical device companies after developing their technologies to a sufficiently attractive level (such as after conducting the first two clinical trial phases). However, even if global market legitimacy is not the intended or attainable end, for a life science start-up legitimation presumably starts with the venture foundation[5] (social innovation in the model).

In the legitimation model, the following stage is "local validation", followed by diffusion during which the social object to be legitimated is spread in different contexts. For a life science venture, validation logically corresponds to commercialization of the firm's technologies and initiation of international sales of the company's products and services (Mehta, 2008; Jones, Wheeler, & Dimitratos, 2011). However, for a life science venture, the local validation stage is not local in terms of home market. Validation starts with the firm's immediate resource holders. However, in this respect, immediate does not necessarily refer to the spatial sense, but rather the sense of its relevance where the remaining parts of the environment, although not unimportant, may be set aside for a while (Thompson, 1967, p. 27). For a life science venture, the immediate audience may comprise customers, suppliers, competitors, or regulatory groups across countries or even continents. Thus, a firm needs to achieve validation internationally as well. Therefore, this study calls this legitimation stage "international validation" instead.

[5] Although the legitimation for the technological innovation per se might start before the foundation of the firm, legitimation for the organization around the innovation is considered to start with the firm's foundation.

Once international validation takes place, such that the organization and its technology has been assessed and validated, it eventually moves to the next stage of legitimation – that is, the diffusion stage, where the firm realizes international sales growth. In this stage, the number of customers that the firm acquires or the markets that it has a presence in signifies its diffusion in different contexts as it experiences sales growth. Eventually, general validation of the organization may be possible, but only after its diffusion in a sufficient number of markets for broad recognition and international growth. The proposed overall legitimation model of life science firms is displayed in Figure 3.

Figure 3. Proposed global market legitimation model of small life science firms



Adapted from Johnson et al. (2006)

5.2 Legitimation in networks

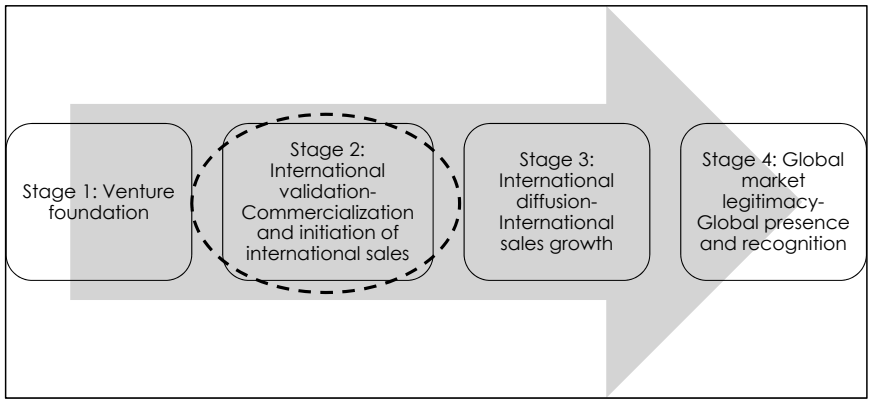
Global market legitimacy (Stage 4), as the ultimate objective of legitimation, is considered a collective judgment made by actors in a market at an aggregate level. The most prominent way of measuring whether a firm is recog-

nized globally in a network setting is to control its relation with the prominent (that is, central) actors, if not all actors in the network. On the other hand, knowledge about the focal firm may spread in many ways; for example, through market-based information such as statistics and reports (Van den Bulte & Lilien, 2001). Hence, the audience may or may not be in direct relation to the focal firm. Given that the organizational legitimation model by Johnson et al. (2006) is adopted in this study, for a more comprehensive conceptualization one can look at the innovation diffusion literature in which this model was founded (Rogers, 1995). This literature provides guidance about important factors and processes associated with diffusion, with much of the early work conducted within sociology (e.g., Coleman, Katz, & Menzel, 1966). Rogers (1995) proposed that especially in the early periods of diffusion, organizational characteristics have an influential effect on the adoption of an innovation. For example, characteristics of early adopters tend to influence the adoption rate of later adopters. The theoretical reasoning behind this argument is that social diffusion can arise from a variety of sources besides information sharing, such as social pressures (see social coercion in networks; McFarland, Bloodgood, & Payan, 2008; see also the legitimacy diffusion model of corporate entrepreneurship by Hornsby et al., 2013). In a complementary manner, Milanov and Fernhaber (2009) focused on existing relationships that a partner may have with other firms in establishing venture legitimacy. They determined that network centrality and network size of the initial partner are critical in the diffusion of a venture's network. Thus, in accordance with this view, the qualitative assessment of the firms' network relationships also gains extra importance, especially during the validation stage. This means that in the "international diffusion" stage, legitimation is suggested to continue in a more quantitative manner in networks where the number of customers, foreign markets, and international sales volume are the subject matter; in the "international validation stage", this mostly proceeds qualitatively (by qualitative, this study refers to the identity of the corresponding party with whom the firm has a relationship, rather than how many relationships it has).

In this study, none of the case firms have reached Stage 4 of their legitimation, but all have been through Stages 1 and 2, and some have moved forward to Stage 3 (cases that have products/services in the market and

have experienced international sales and growth). Accordingly, the focus of the study is mostly on Stage 2 as shown in Figure 4, where the firm is validated in international networks and realizes international diffusion.

Figure 4. The dissertation's focus during legitimation in international networks



Adapted from Johnson et al. (2006)

5.2.1 Legitimation within networks

A recent stream of research combining institutions and networks has already provided a promising and novel ground for understanding institutional processes that occur within networks by considering networks as a substantive dimension of economic and social milieus that regulate the formation and implications of relationships (Cattani, Ferriani, Negro, & Perretti, 2008; Higgins & Gulati, 2003; Owen-Smith & Powell, 2008). According to Owen-Smith and Powell (2008), first, a network is a platform and an institutional repository. Thus, networks enable social construction and institutionalization as shared norms and cognitive categories; additionally, stable role structures emerge and are sustained out of repeated interactions within network structures. Second, and most significant for this study, networks are essential to legitimation because they are considered both the

pipes through which resources circulate and the prisms that observers use to make sense of action and form their judgments. In this understanding, economic activities are embedded in a social sphere, where legitimation in this manner is both categorical and relational. It is categorical in that its prevailing rules, cognitive categories, and expectations determine the legitimate parties to a relationship and condition the formation and development of network relationships. On the other hand, it is also relational as the presence and absence of certain relationships render a clearer picture to observers and participants alike by allowing them to classify and order both the actors and their relationships into categories (such as legitimate versus not-legitimate, separate identities, etc.) (Owen-Smith & Powell, 2008).

In the theory, the main driver behind this relational understanding of legitimation is generally referred to as "legitimacy spill overs" (Suchman, 1995, p. 588), which emerge from the shared cognitive categories associated with relationships. Thus, the subject of legitimacy assessments does not comprise only the focal organization, but also the other organizations related to the focal organization. Firms receive legitimacy spillovers by being associated with actors that are already perceived as legitimate. Thus, a focal organization pursues legitimation in order to become legitimate and be able to develop relationships with external actors; once these relationships have been established, it creates legitimacy spillovers through them. Consequently, this analytical framework suggests that legitimation occurs in networks in an interdependent and dynamic manner.

In order to identify the cognitive categories prominent in international life science networks, the study turns to the rich body of industrial market network research (the foundation of network views dominant in internationalization literature was discussed previously, in Chapter 4.

5.2.2 Industrial market networks and legitimation of small life science firms

Network views describe industrial markets as non-hierarchical systems in which firms invest to strengthen and monitor their position in networks of a global industrial system (Johanson & Mattsson, 1988, 1992; Johanson & Vahlne, 1990; Sharma, 1992). This system perspective calls for macro structures of industrial networks that exist regardless of the focal firms' direct

relationships to it. As firms internationalize, they develop and strengthen network positions in these structures (Johanson & Vahlne, 2009). Johanson and Mattsson (1988) suggested that these industrial international networks are to be partitioned in many ways (geographical areas, products, techniques, etc.). The authors used the term "nets" to identify specific analytical parts of this network (for example, product net, national net, etc.). In this view, one can assume the more internationally knitted the nets of a market such as life science are, the more global and internationally interdependent these nets become. Thus, different nets gain interdependent levels of importance when it comes to shared cognitive categories utilized for social construction of legitimation. Thus, they are essential in understanding the complexity of the legitimating audience; but are also important in helping culturally knowledgeable and skillful managers display the categories that their organizations belong to, which are otherwise hard to observe.

Hence, two dimensions of nets are identified as they are considered likely to provide sources of partitioning in cognitive categories in life science networks; these are the actor group and spatial dimensions. Life science actor group nets are often dispersed across borders, and overall these nets comprise international life science industrial networks. Thus, the spatial dimension and actor groups are only different dimensions of one international/global life science industrial network; however, they are considered significant for understanding the complexity of a life science firm's social context.

Actor group nets

Successful start-ups in the life science industry are usually those that are capable of developing the skills of adapting to, managing, and maintaining multiple types of activities with a diverse set of actor groups throughout the processes of technology development, commercialization, and sales and growth (Melén & Rovira Nordman, 2009; Nummela, 2004). On the other hand, these actor groups can be regarded as constituting separate sociocultural groups (Greenwood, Hinings, & Whetten, 2014; Lamin & Zaheer, 2012; Pontikes, 2012). Thus, the different norms, values, and expectations of each actor group are likely to shape the legitimacy spillovers to a focal firm by holding a relationship to an actor from a certain group. This study

outlines distinct actor group nets specific to the life science industry as follows: research organizations, business organizations – large: multinational corporations (mostly big pharma), business organizations – small and medium sized: life science SMEs, and state organizations (see Chapter 3).

Spatial nets

Despite the generally assumed universal nature and relative cultural insensitivity of technology, not every actor in a life science firm's focal network seems to be available globally (Renko, 2011), making it impractical to disregard the spatial partitioning of life science networks. Thus, an additional layer of complexity inherently accrues; that is, a collective audience that shares institutions bounded by national/regional borders. This dimension has been the most common, particularly in the international business (IB) field. Although the country-level analysis still distinctively demonstrates the institutional characteristics of the environment, the most relevant institutional context may be broader than a single country and in fact be associated with transnational institutions (Djelic & Quack, 2003). Thus, researchers are advised to be open to more micro or more macro levels of analysis (Kostova & Zaheer, 1999; Phillips et al., 2009). This advice is taken as binding for analyzing life science firms' legitimation. Although the number depends on the purpose of the research question this study limits the spatial dimension to home country, foreign country, regional, and international/global layers.

5.3 Limitations regarding the analytical framework

As discussed previously in the dissertation, the business processes of life science firms depend on the state of a number of different projects. Hence, a firm may be engaged in sales and marketing activities for one project, yet be busy developing the technology for another one. Therefore, legitimation may be analyzed for every project or product group that the firm is pursuing. In reality, it is possible that loops emerge in one single firm's legitimation when it introduces a new technology or product line. Furthermore, in

this case, one may even consider the possibility of adding an additional layer of legitimacy spillovers between the projects to the focal organization or the subsequent project. However, as my project's research question is not about one specific innovation, but rather focuses on the organization interlinked with the innovation, legitimation is considered to proceed further in the framework. This is because knowledge about the organization, as the essence of cognitive legitimacy in the international focal-interest network, is considered to continue in a linear manner, thus limiting the comprehensiveness of the analytical framework.

The study concentrates on cognitive legitimation. However, although analytically distinct, in reality, legitimacy constructs are interrelated to some extent. For example, regulatory institutions force life science firms to comply with the clinical trial processes of developing life science products in order to enter the market. Hence, complying with clinical trial requirements stems from coercive pressures in the environment. However, the compliance status simultaneously provides a basis for the formation of cognitive legitimacy judgments based on the attributes of the firms associated with what a successful firm should look like (such as the category of firms that have complied with and passed Phase II clinical trials). Thus, the presence of regulative legitimacy may be perceived as comprising the sources of cognitive legitimacy for investors and technology-development partners.

The same applies with EU grants. The EU and its framework programs generally have strict guidelines for the type and number of partners a firm should hold in order to be eligible to apply. Hence, as applying and utilizing EU grants is observed as common practice for Swedish small life science firms, the EU rules comprise a source of prevailing cognitive institutions indicating the type of international partners a "standard" technology start-up holds. Consequently, the complexity produced by the strong interlink between the legitimacy constructs as exemplified above is the limitation brought by the analytical framework.

Chapter 6

Summary of the Articles and Discussion of Findings

The research purpose of the dissertation has been pursued through four individual articles. In this chapter, a brief summary of each article, along with its individual contributions to the dissertation, are portrayed. The findings are then discussed in the form of answers to each of the two principal research questions addressed by the dissertation.

6.1 Summary of the articles

The first article in the dissertation differs from the other three in terms of its focus and approach. Article 1 considers small and medium-sized firms from various industries, and the issues they face within their ongoing relationships; whereas the rest of the articles focus on firms from the life science industry, specifically at the earlier stages of their organizational and network developments. In Article 1, my co-authors and I develop arguments that a firm's perception of institutional impediments experienced in a key business relationship in a foreign market negatively affects the performance derived from that relationship. The article demonstrates institutional impediments as constraints on attaining relationship legitimation, and as manifesting in negative performance outcomes. The social exchange processes underlying our reasoning in this article were able to explain economic behavior regardless of the industry. Thus, the article's strong theoretical

stance puts our findings in a more general, and less industry-specific, context, and thereby entails life science firms. The findings suggest that firms' investments in their key relationships and connections to foreign market networks have positive performance implications, as they help firms develop towards mutual acknowledgements with their partners that their actions are suitable. Furthermore, the study displays empirically that institutional impediments materialize in international business networks, as these impediments are experienced, enacted, and also managed within the networks. In this respect, the article contributed greatly to the conceptual development of the dissertation's main research purpose and analytical framework. Furthermore, although in the article the institutional impediments are considered to emerge from the differences in institutional contexts among countries, the findings suggest that the degree of connection with institutional organizations (authorities, banks, and industry organizations) and business organizations (customers and suppliers) have distinctive implications for the focal relationship. This insight helped to develop the construct "actor group net", which is used to a significant extent in the other articles, and within the entire dissertation.

Article 2 is a conceptual study. It takes the institutional network conceptualization used in Article 1, and develops this further in the context of new venture legitimation. The paper examines the complexities in the conditions of internationalizing new ventures' legitimation and suggests that complexities particularly emerge because of the multi-layered nature of the audience; high uncertainties connected to the focal organization inherent in their small size, young age, and internationality; and relatively underestimated dynamic nature of the process. In order to address these complexities, the paper proposes an interactive and dynamic understanding of legitimation driven by multi-layered legitimacy spillovers across different actor categories and spatial dimensions of firms' legitimating audience. Thus, it contributes to the dissertation primarily via the development of the analytical framework and by providing answers to the question of how firms pursue legitimation within international networks.

Article 3 develops the legitimation view proposed by Article 2, and mainly contributes to the dissertation by answering the first research question. Thus, it examines legitimation of life science firms empirically in mul-

tiple case studies and shows how legitimacy spillovers from different actor groups contribute to focal firms' legitimation on scientific or business attributes. Accordingly, the article draws particular attention to the interdependence of validations achieved from different actor categories and the firms' quest for leveraging positive legitimacy spillovers over time.

Article 4 presents empirical findings from a multiple case study analysis of six successful small life science firms. Based on the findings, the article identifies three groups of practices that firms engage in to enhance legitimation in international markets: interacting with an international/global audience, utilizing symbolic behaviors, and enabling international legitimacy spillovers. The article further distinguishes firm-specific differences that influence the case firms' engagement in these practices, such as the focal firm's role in the industry's overall value chain and founding teams' scientific attributes. Therefore, Article 4 contributes to the dissertation by presenting answers to both the first and the second research questions. Table 9 presents a summary of each article's findings and their contributions to the dissertation.

Table 9. Summaries of each article's findings and its contribution to the dissertation

Article 1:	**Managing institutional impediments through relationships and networks**
Specific contributions in:	**Findings:**
Developing the dissertation's overall research purpose and analytical framework by empirically validating the implications of institutions and legitimation within international networks. Developing the constructs used in the subsequent articles.	• Perceived institutional impediments in a foreign market enacted in a business relationship have negative implications on relationship performance. • This negative effect can be turned into a positive effect in two ways: First, the firm can make relationship-specific investments that enable it to manage the institutional impediments, with positive relationship performance as an effect. Second, the firm can increase its dependency in institutional and business networks in the host country.

Article 2:	**International new venture legitimation: A multi-layered framework**
Specific contributions in:	**Findings:**
Developing the dissertation's analytical framework by providing a thematic review of the extant international new venture legitimation literature. Providing answers to the first research question.	• Based on a thematic literature review on INV legitimation, three distinct groups of complexities are identified that small firms face during their international legitimation. These are: (1) multi-layered audience, (2) high uncertainties connected to the organization's young age, small size, and internationality, and (3) dynamism in the legitimation process – that is, constantly changing conditions. • A multi-layered legitimation framework is proposed that is interactively driven by the focal firms' network development and the legitimacy spillovers from this network.
Article 3:	**Legitimation network paths: Relational and dynamic understanding of young life science firms' legitimation**
Specific contributions in:	**Findings:**
Providing answers to the first and second research questions.	• Young life science firms' network partners engage in organizational legitimation by providing (1) scientific and (2) business legitimacy spillovers. • The data revealed a shared understanding of legitimacy spillover interdependence across different actor groups. Different actor groups' involvement in firms' legitimation is shaped primarily by this prevalent perception about the hierarchy of actors providing legitimacy spillovers in the eyes of others. • Accordingly, the key opinion leaders are at the top of this perceived hierarchy, followed by universities, research institutes, and state organizations. Large business organizations and smaller firms take subsequent places. • Arrangement of different actor groups' involvement in an individual firms' legitimation (its legitimation network path) varies depending on firms' initial legitimacy spillovers from their founders and target audience. • Accordingly, firms that had KOLs among their founders enjoyed early scientific legitimacy spillovers and proceeded relatively smoothly down the prevalent hierarchy of actors throughout their market legitimation. On the other hand, network paths of firms that did not have KOLs among their founders seemed to deviate from this trend. One of the cases established a relatively higher number of early relationships with state organizations, whereas the other skipped the steps of building relationships with KOLs, universities, and research institutes during its legitimation shortly after receiving negative outcomes from its attempts. • The case firm that did not pursue the attainment of sci-

	entific validation from these actors later found that the influential actors differed for its targeted niche market. Hence, the results suggest that firms' individual legitimation network paths also vary depending on the specifications of their target audience.
Article 4:	**Legitimacy-seeking practices during international venturing of small life science firms**
Specific contributions in:	**Findings:**
Providing answers to the first and second research questions.	• Firms employed significant management efforts in a variety of international market legitimacy-seeking practices. These include: (1) interacting with an international/global audience (presenting at international scientific and industry conferences; utilizing internet tools; personal networking; publishing articles in international academic journals); (2) enabling international legitimacy spillovers (publishing articles in international academic journals; associating with international institutional actors; associating with universities with international reputations); (3) utilizing symbolic behaviors (looking as-if larger; looking as-if more professional). • Firms address a broad international community to seek legitimacy in the early stages of their organizational and network development. • The significance of each practice in terms of the extent of the management efforts employed varies according to firms' roles in the industry's overall value chain and their founding teams' scientific attributes. • Accordingly, firms that had no KOLs among their founders showed higher levels of engagement in enabling international legitimacy spillovers compared to those that had. Furthermore, firms that pursued fully integrated roles in the value chain, including R&D, clinical trials, manufacturing, marketing, and distribution, showed higher levels of engagement in utilizing internet tools when seeking legitimacy compared to those that pursued R&D and out-licensing projects. On the other hand, the firms in the latter group showed higher levels of engagement in personal networking.

6.2 Findings

The empirical findings show that the international network development patterns of the case firms were strongly associated with their overall organizational functions, which include R&D, production, marketing, sales, and distribution. A number of the case firms began to sell to multiple foreign markets right from their foundation, or shortly after (Cases J, K, L, M, N, O, P, Q, and R). In cases where revenue streams had not yet been established, their operations nevertheless involved cross-border activities in the form of R&D, product development collaborations, and partnerships with international associates (Cases A, B, C, D, E, F, G, H, I). Hence, the cases in the study confirm and illustrate that life science firms are born into a social context that contains an international element, and pursue legitimation in this context from their inception. The next sections discuss the findings from the articles in relation to the dissertation's two research questions.

How do small life science firms pursue legitimation in international networks?

First, the findings suggest that legitimacy is a condition for firms to relate to their environments and be able to initiate and develop relationships with external actors, rather than a resource that is acquired and possessed. Accordingly, whether a firm is perceived as being in a legitimate condition in a certain situation depends on aspects such as when that situation occurs, and who the audiences are. In other words, the primary audiences and the validation criteria may change depending on the firm's organizational and network development phase. Second, the findings provide empirical evidence to suggest that legitimation in networks may be viewed as a path, where the presence of a firm's previous validations (those with whom the firm has connected) influence the firms' likelihood of drawing the attention of, and acceptance by, its potential network partners at that time; in turn, this will affect its future validations. Moreover, the empirical findings provide insights that legitimation in networks arises both of its own accord and as a result of management's intentional efforts to contribute positively to it. Thus, legitimation of life science firms may be best understood by under-

standing the shared cognitive categories and their interdependencies that exist in network structures. These interdependencies relate to perceived legitimacy spillovers associated with the presence or absence of firms' relationships with certain individual actors, actor groups, or markets. At the same time, firms also seem to pursue legitimation intentionally by engaging in practices of influencing validations of external actors proactively through the activities of interaction, communication, and exchange, as well as choosing partners selectively in order to leverage legitimacy spillovers.

The cases highlight two main types of legitimacy spillovers: scientific and business. The data shows that certain actors were associated with providing scientific legitimacy spillovers perceived to validate the worthiness of focal firms' technologies. Academic KOLs, universities, and research institutes, as well as state organizations, were frequently referred to providing this type of spillover. Associations with these actors were considered to have a large impact on validations by both academic and industrial actors. On the other hand, business legitimacy spillovers signify that young life science firms are capable of fulfilling the expectations of a competent business partner (for example, handling quality control, logistics, and aftersales services and having the operational skills necessary to comply with alliance procedures). The case firms attributed certain business organizations as the sources of business legitimacy spillovers; these were generally referred to by the respondents as "reference customers". The data shows that these organizations were commonly large and established industrial actors (for instance, multinational pharmaceutical companies). These actors were considered to have an impact specifically on validations by industrial actors. Consequently, based on these findings, the conceptual construct *legitimation network path* was developed (Article 3). This refers to interdependencies of validations by different actor groups throughout a focal firm's legitimation. In this view, legitimation relies on the heterogeneity of actor groups in a network that provides the ground that each of them offers some information for others in dealing with uncertainty; for example, when a business has international ambitions, relationships with prominent universities can enhance the firm's validation in foreign markets in the eyes of customers. Similarly, having a respectable list of reference customers in an overseas market helps to remove the natural unwillingness of foreign

investors to risk money on a small entity headquartered in a remote country. Thus, a young life science firm's legitimation in networks is presumed to occur as different actor groups successively connect to the focal firm.

At the same time, the findings reveal that management puts effort into shaping their firm's individual legitimation network path. Moreover, the empirical findings show that firms' practices in order to convince their immediate audiences that their organizations are legitimate for engaging in exchanges are not limited to efforts to cause legitimacy spillovers. Rather, these practices entail (particularly at the earlier phases of firms' international validation, especially before they start a certain degree of international growth and form a number of relationships in respective networks) interacting with an international/global audience, and utilizing symbolic behaviors (Article 4). Thus, as they start to develop their networks further, firms find the possibility to rely on leveraging their current relationships for legitimacy spillovers.

How do firm-specific differences influence small life science firms' legitimation in international networks?

The study's empirical findings show that legitimation of small life science firms varies depending on firm-specific differences, because the organizational characteristics influence the legitimation conditions. The findings suggest two main groups of firms when it comes to difference in how they pursue legitimation. These are KOL and non-KOL firms. The KOL firms are those that have eminent scientists among their founders, and are suggested to diverge from firms that do not have these actors (non-KOL firms) in both their specific legitimacy-seeking practices and their legitimation network paths.

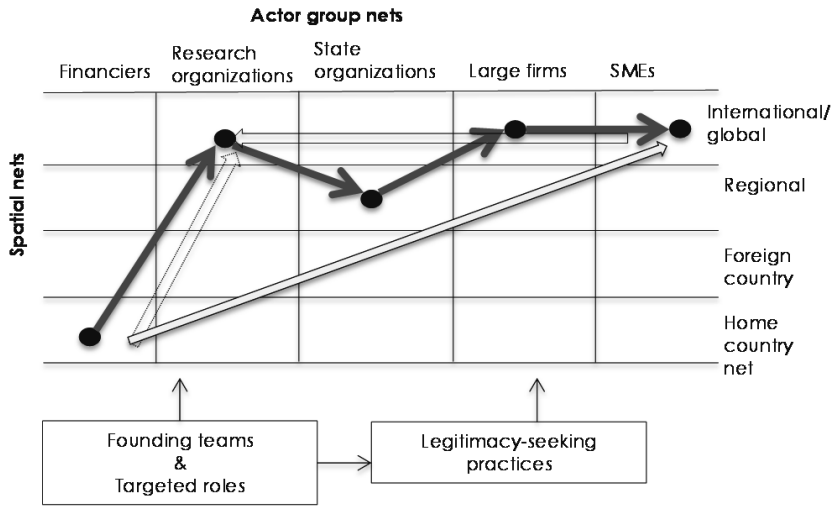
Non-KOL firms seem to show higher levels of engagement in enabling international legitimacy spillovers, compared to the KOLs (Article 4). On the other hand, these firms' legitimation network paths also appear to deviate from those of KOL firms that enjoyed early scientific legitimacy spillovers from their founders and proceeded relatively smoothly towards market legitimation (Article 3). On the other hand, as one of the non-KOL cases displayed, these firms may choose to compensate the lack of connection

with a KOL by presenting a relatively higher number of relationships with certain organizations (for example, rewards from industry associations, or research grants from state organizations). However, the case study of another non-KOL firm showed that the management dropped its efforts to build relationships with KOLs, universities and research institutes, and state organizations during its legitimation after a short period as it had received no outcomes from its efforts. Thus, it did not attempt to attain scientific validation from these actors like most of the other firms did; later on, it experienced that the influential actors for its targeted niche market actually differed from those of the well-known KOLs in the scientific field. Therefore, this case study suggested that firms' legitimation network paths are also likely to vary depending on their target audience.

Furthermore, the findings highlight another firm-specific difference related to their legitimation: their roles in the industry value chain. As advocated earlier in the dissertation, the ultimate goal of a life science start-up from a network view is to develop and grow the new venture, and at the same time establish positions in international networks. Thus, a life science firm's global position typically depends on which role it aims to take in the overall value system of the industry, which encompasses innovations relating to one or more technologies and includes different processes. The empirical findings suggest that firms that pursue fully integrated roles in the value chain, including R&D, clinical trials, manufacturing, marketing, and distribution show higher levels of engagement in utilizing internet tools when seeking legitimacy, compared to those that pursue R&D and out-licensing projects (Article 4). Thus, a firm's target role is closely connected to how its operations are organized and the practices are diversified; including the practices pertaining to how the firm seeks legitimacy.

Figure 5 displays an illustration of the findings. The aim of the figure is to suggest a visual portrayal of the multi-layered legitimacy spillovers and exemplify legitimation network paths, rather than displaying a comprehensive framework.

Figure 5. Illustration of the findings



The horizontal axis in Figure 5 outlines the broad actor diversity, while the vertical axis shows the geographical dispersion of the actors in the small life science firms' networks. It accordingly distinguishes two distinct dimensions of international networks: actor groups (the organization type of the network partner), and the spatial dimension (the location of the network partner). The partitioning in Figure 5 suggests that the network is divided into nets that represent actors both as sources of legitimacy spillovers (present network partners) and as the audiences that observe and validate the focal organization (prospective network partners). On the other hand, legitimation network paths vary depending on the features of the founding team and the targeted roles, as well as the firms' practices. Therefore, they are represented with small boxes in the figure.

The thick arrows illustrate two legitimation network paths from the two firm typologies suggested by the empirical cases (KOL and non-KOL firms). The dark thick arrow exemplifies a KOL firm that develops relationships with international universities and research institutes, provides scientific validation for the company, and then develops relationships with multinational firms and connects to a diverse base of the market, including

SMEs. The light thick arrow represents one specific non-KOL case firms' legitimation that was discussed earlier, as it represents an explicitly diverging path and thus provides a good visual example. In this case, the firm first attempts to connect to universities located in its home country net for validation; however, this turns out to require more effort than the management is ready to exert (marked in Figure 5 with a dashed arrow). Thus, the management puts most of its efforts into finding international customers, mostly through internet-based tools. After establishing a sufficient number of relationships with business actors in international markets, the firm eventually finds it easier to connect to universities.

The legitimation network paths in Figure 5 represent significantly simplified versions of the firms' networks in real life. They only outline the paths that are significant for firms' legitimation, and do not claim to represent all the present relationships. By significant for firms' legitimation, it is referred to cases for example in which, a non-KOL firm may have a grant from a state organization in real life, however the central part of its legitimation network path may still not flow through this relationship.

Chapter 7

Conclusions and Discussions

As individuals, most of us are aware that people with whom we spend time have indisputable influences on us. Even those who are less aware have most likely heard, at least once, teachings such as "man is known by the company he keeps" or "tell me who you are friends with and I will tell you who you are". In social life, it is important to have the right friends. Moreover, based on the same argument, the presence or absence of social relationships that connect individuals provides a sufficient basis for drawing categories that make it easier for us to make sense of our daily lives (Berger & Luckmann, 1966). Accordingly, networks providing structures connecting actors is a social map that outsiders utilize to form judgments about a given actor's prospects (Owen-Smith, Cotton-Nessler, & Buhr, 2015).

This dissertation advocates the argument that, like individuals, organizations act in a world of categories. Given the limited cognitive capacity of executives and the commonality of uncertainties surrounding business choices (Simon, 1947; Ocasio, 1997), organizations are considered likewise to rely on macro schemes when making micro decisions. Scholars have already addressed the fact that inter-organizational networks provide insights into the dynamics and implications of social stratification in markets (Podolny, 2001). This effect is considered particularly significant when the uncertainties in the context are high and the evaluations about network partners are accordingly difficult to assess (Sytch, Arbor, & Gulati, 2000),

such as in industries based on new technologies. In the cases of small life science firms studied in this PhD project, this effect significantly revealed itself during the focal firms' organizational development and international expansion.

The particular contributions of the study to the theory are identified in the followings sections. My aim for this dissertation is to stimulate further research on legitimation of small/new firms in international networks. Furthermore, by taking a context-sensitive and industry-specific approach, I aim to draw attention to the relevance and applicability of the study's findings for practitioners in management and policy making. The contributions presented in this part are not a collection of the conclusions of the separate articles, but aim at a clarification of the major conclusion of the whole.

7.1 Contributions to theory and avenues for future research

The findings of the dissertation essentially contribute to studies of entrepreneurial internationalization and of new venture legitimation. Therefore, the following sections present the specific contributions and future research opportunities under these headings.

Studies of entrepreneurial internationalization

International entrepreneurship defines internationalizing driven by an entrepreneurial process as derived from the relationship between the firm and the environment in which it operates (Wright & Ricks, 1994). Consequently, successful firms are suggested to be those that are able to recognize potential opportunities in their environment, where the networks, and the benefits they provide, are underscored to compensate for small firms' inherent resource scarcity (see Jones, Coviello, & Tang, 2011). Consistent with this view, this study contributes to the field by distinguishing international market legitimacy-seeking as an additional component of international entrepreneurship. Legitimacy-seeking discussions can offer answers to questions such as why some firms mobilize more resources and are able to

internationalize more successfully than others. Entrepreneurship scholars have long acknowledged legitimating activities as the first step in entrepreneurial organizing because obtaining legitimacy is a necessary condition for developing relationships, as well as obtaining and recombining resources (Delmar & Shane, 2004). Thus, this dissertation contributes to the IE field by providing empirical insights into how firms seek legitimacy in international networks, and how it varies due to firm-specific differences.

Networks, and the benefits they provide, have comprised the fundamentals of small-firm internationalization research, whereas their role as helping the firm to attain legitimacy in international markets has already been acknowledged by a number of studies (e.g., Suh & Lyn, 2007; Tolstoy & Agndal, 2010). However, despite the explicit call of prominent scholars for future research in this area (Coviello & Cox, 2006), there seem to have been few attempts to address the question of how they do it. Therefore, providing empirical cases of legitimacy spillovers from firms' network partners is a contribution to broadening understanding of networks' role during international expansion on this aspect. Furthermore, the dissertation provides a conceptual understanding that relates legitimation to industrial market networks and expands our understanding of the role of a firm's own network for legitimation in the context of the relevant network structures in international markets. However, these newly developed constructs and framework has not been empirically tested. Therefore, future empirical studies that test the theoretical arguments presented in the articles 3 and 4 are encouraged.

Furthermore, by conceptualizing legitimation network paths, the dissertation illustrates a recursive internationalization process between the firm and the networks. With this conceptualization, what is suggested is an alternative way of viewing internationalizing in networks, driven by firms' quest for legitimacy instead of merely by their international opportunity-seeking behavior. In this understanding, firms pursue legitimation as a condition of developing their networks; these networks help legitimation through legitimacy spillovers, thus enabling firms to develop their networks further, and so on. Consequently, given the multi-disciplinary nature of the IE research, adopting an organizational institutional lens on studying internationalization and networks in this context offers great possibilities for

stimulating future research interest in the topic and further nourishing the field.

In the dissertation, the firm-specific characteristics were tackled mostly as an objective factor influencing legitimation. Furthermore, the study mainly assumed firms as entities that are equally capable of seeking legitimacy, and did not take into account the variances in the degree of knowledge and capabilities. However, it is possible that firms that accommodate low levels of industry business knowledge may even be unaware of the well-accepted relational patterns in the network. Alternatively, managers may perceive uncertainty as being proportionally high with lack of experience. In order to steer their businesses in uncharted waters, they may perceive the institutional pressures higher for following the formulated relational behaviors and the partners. From the overall observations in the case studies, the extent to which we can make sense of an individual firm's specific context appears to be mostly related to the degree of knowledge regarding the international markets and the logics of actor groups from different areas, such as science and business. Accordingly, a perspective that involves these aspects brings future research opportunities for comprehensively including the differences between individual organizations to the general understanding of legitimation. Institutional knowledge is already a well-established construct in the international business field (Eriksson, Johanson, Majkgard, & Sharma, 1997). As the small firms' knowledge and skills are directly connected to those of the founders and the managers, the background, social capital, and professional experience of these persons gain further significance for indicating the degree of institutional knowledge in the firm and its legitimation.

Finally, the dissertation theoretically assumed legitimation as a collective social construction process; however, this was studied from the focal organizations' perspective. Hence, future studies that are designed to include investors, customers, and regulators' viewpoints, along with how these actors form their judgments about a company, and how much attention they give to the prospect company's present network relationships, are strongly recommended.

Studies of new venture legitimation

The dissertation contributes specifically to micro-level studies of new venture legitimation by presenting fine-grained empirical case studies of legitimacy spillovers and-cross validations between actors. Extant research has confirmed that new ventures pursue legitimation by associating their organization with categories from domains that their audiences may be familiar with (e.g., Cornelissen & Clarke, 2010; Hargadon & Douglas, 2001; Navis & Glynn, 2010; Santos & Eisenhardt, 2009). However, knowledge about how they create associations with interdependent categories (spillovers) prevalent within the networks has remained limited. Furthermore, the dissertation portrays the complexities in the conditions for new venture legitimation in the case of life science firms, while at the same time it addresses two specific timely calls for future research (see review by Überbacher, 2014): more deeply examining new venture sub-types' legitimation, such as international new ventures, and highlighting the diversity among a venture's audiences.

One fruitful future route to take for developing the understanding of new venture legitimation in networks is to investigate the dynamics of the process at the focal organization or the individual-entrepreneur level. From the focal firm's perspective, the process is driven by managements' sensemaking of their interactions with the other actors by combining new inputs with their present knowledge, and learning about, adapting, and enhancing the legitimation process (Weick, 1995). Learning then occurs through social interactions with other actors and interpreting the results of its own and equivalent others' attempts at network development in terms of endorsements and blockages (Johnson, Dowd, & Ridgeway, 2006). According to Cattani, Ferriani, Negro, and Perretti (2008), connectivity defines the threshold of a focal firm's acceptance as a legitimate actor in a network. On the other hand, once the connectivity has been achieved, it at the same time may enable the focal firm to verify its present knowledge and understanding of the legitimacy expectations of the evaluating parties. For example, if a firm attempts to initiate R&D relationships with top researchers in its field of interest, the manager(s) will intrinsically contact relevant universities and try to initiate contact and interaction. They will then ideally attempt to

make sense of and interpret the results of these interactions (for example, in terms of whether the interactions resulted in the aspired-for collaboration). Hence, if attempts at relationship formation continue mutually in the form of repeated interactions that indicate the degree of preference for the legitimate actor over others (Cattani et al., 2008), the firms' present understanding of the evaluating actors' expectations can be verified. Negative results of relationship formation attempts in this regard would lead to doubt regarding the present knowledge and ideally evoke a willingness to learn. Hence, future studies that aim to develop understanding of new venture legitimation in networks stands to gain a great deal from including organizational relational processes.

7.2 Implications for practitioners, policy makers, and society in general

The present study provides insights for the managers of internationalizing small firms in high-technology industries. In the aftermath of the global downturn of 2008–9, it has become commonplace to refer to small and medium-sized firms as the backbone of the global economy. However, it is also commonplace that many of these firms fail within a few years after their foundation. This failure may depend on many factors; however, management is one of the most critical by far. Thus, the question arises as to how founders and managers of a technology start-up can deliver growth while retaining future access to critical resources across borders. Hence, this dissertation aims to provide a framework that may help them to develop strategies to overcome hurdles emerging from the lack of legitimacy and restriction of access to further critical resources through networks.

The life science industry is an important segment, with economic and political significance for today's society. It contributes to health and wellbeing through innovative solutions that meet medical needs. In addition, biotechnological inventions support increased knowledge about the mechanisms behind the fundamental biological processes of human life. However, taking life science technologies to markets is a challenging task and generally requires large investments from day one. This dissertation

suggests that international validation is the most critical stage to signify the start-ups that achieve access to the partners and the resources necessary to convert these technologies into market values, and the ones that are seemingly cease to exist. By providing empirical and theoretical insights, the study aims to enhance the awareness of managers in public and private sectors that in order to survive and prosper in high-technology markets, it is imperative to pursue legitimation with an understanding of the complexities of a globally connected social sphere. The study aims to enhance awareness and knowledge that will help to minimize failures due to management hurdles through the long and difficult path of making useful life science technological advancements that benefit society.

Thus, for life science firms, legitimation is rarely limited to local markets. However, the availability of internationally high-ranked research institutes in the home country is nevertheless an advantage; this can be seen in the fact that the case firms most often emphasized the benefits of relationships with Karolinska Institute. Therefore, the local market is found to be most significant for accommodating these prominent organizations and the support role that the state organizations undertake (such as state innovation and state advisory and financing agencies). The organizations were identified by the case firms to provide early finances through grants and awards, but were also a significant source of validation for the worthiness of the case firms' technologies. Furthermore, industry associations are significant noteworthy actors in the local market in terms of legitimation, along with the fact that their positions and connections in the international market constitutes a bridging role between the life science firms in Sweden and the rest of the world. In this study, SwedenBio, Swedish life science industry organization, was mentioned many times by the case firms as a central actor. Finally, the dissertation provides specific managerial takeaways for internationalizing small life science firms; these are outlined below.

Firms should be wary of industry's prevalent legitimation network paths and choose the path that best suits their company

This study confirms the view that evaluation of life science organizations and products is determined not only by hard data and quantifications, but

also, to a large extent, by soft factors. Thus, a manager's role in this context is to gather suitable knowledge about the legitimacy interdependencies between the actors in a global market, and use this knowledge to communicate the qualitative validation of the company. Intentionally managing legitimation network paths requires the initiation of contacts and establishment and careful maintenance of network relationships with certain actors, which is an inherently challenging task due to the scarcity of managerial resources generally associated with young firms. In this respect, each company needs to develop a unique understanding of its needs and goals, where recognizing relationships with misleading legitimizing actors may be helpful in conserving scarce resources. For example, employing prominent scientists on a company's board may seem to be a good option for other companies' legitimation, but it may not suit one certain company's needs. Early partnering with well-known global distributors may again be a significant step in the legitimation paths of others; however, depending on the novelty of the technology, it can also hinder the sufficient qualitative validation of technology, which can primarily come from science-based organizations. Superficial validations may have negative implications for sustaining growth when instantaneous opportunities in the market disappear.

Firms should beware of the need for timely change in legitimation network paths

The mechanisms that drive legitimation in networks can be considered at the same time as working in the opposite direction, as a firm's networks can also reveal undesirable attributes of it. A firm that is highly embedded in academic networks may validate the firms' technological attribute in the foundation or commercialization stages. However, the same embeddedness, if not balanced after these stages with different actor categories, may also show the outside world that although the firms' technology has validity, the firm is lacking market insights and competitive skills. Neglect in adapting company's focal network due to its needs, besides putting instrumental burdens on the firm, such as not being able to access the knowledge and the resources that business actors can provide, may also discourage the prospective partners, such as mediators and distributors from engaging in

relationships, that the firm needs to connect with in order to expand internationally in a more accelerated way, and to grow.

Change is considered significant not only for providing timely legitimacy spillovers, but also for other legitimacy-seeking practices, such as interacting with an international audience. The findings of the dissertation suggest that how successful firms seek legitimacy varies depending on their targeted roles in the value chain. Therefore, any change in a firm's business model that affects its present role in the value chain may require changes in how it seeks legitimacy (for example, selection of tools to interact with the audience, such as scientific publications versus personal networking, or internet-based tools versus conferences).

References

Anderson, J. C., Håkansson, H., & Johanson, J. (1994). Dyadic business relationships within a business network context. *The Journal of Marketing*, 1-15.

Acs, Z. J., Morck, R. K, & Yeung, B. (2001). Entrepreneurship, globalisation, and public policy. *Journal of International Management*, 7 (3), 235-51.

Aldrich, H. (1999). *Organizations evolving*. London: Sage Publications Ltd.

Aldrich, H. E., & Fiol, C. M. (1994). Fools rush in? The institutional context of industry creation. *Academy of Management Review*, 19(4), 645-670.

Aldrich, H. E., & Ruef, M. (2006). *Organizations evolving* (2nd edition). Thous& Oaks CA: Sage.

Al-Laham, A., & Souitaris, V. (2008). Network embeddedness and new-venture internationalization: Analyzing international linkages in the German biotech industry. *Journal of Business Venturing*, 23(5), 567-586.

Arnold, K., Coia, A., Saywell, S., Smith, T., Minick, S., & Löffler, A. (2002). Value drivers in licensing deals. *Nature Biotechnology*, 20(11), 1085-1089.

Ashforth, B. E., & Gibbs, B. W. (1990). The double-edge of organizational legitimation. *Organization Science*, 1(2), 177-194.

Axelsson, B., & Easton, G. (Eds.). (1992). *Industrial networks: a new view of reality*. London: Routledge.

Bailetti, T. (2012). What technology startups must get right to globalize early and rapidly. *Technology Innovation Management Review*, 2, 5-16.

Bangara, A., Freeman, S., & Schroder, W. (2012). Legitimacy and accelerated internationalisation: an Indian perspective. *Journal of World Business*, 47(4), 623-634.

Baum, J. A., & Oliver, C. (1991). Institutional linkages & organizational mortality. *Administrative Science Quarterly*, 187-218.

Baum, J. A., & Silverman, B. S. (2004). Picking winners or building them? Alliance, intellectual, & human capital as selection criteria in venture financing and performance of biotechnology startups. *Journal of Business Venturing*, 19(3), 411-436.

Berger, P., & Luckmann, T. (1966). *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*. London: Penguin Books Ltd.

Bilkey, W. J., & Tesar, G. (1977). The export behavior of smaller-sized Wisconsin manufacturing firms. *Journal of International Business Studies*, 8(1), 93-98.

Bitektine, A. (2011). Toward a theory of social judgments of organizations: The case of legitimacy, reputation, and status. *Academy of Management Review*, 36(1), 151-179.

Bitektine, A., & Haack, P. (2015). The "macro" and the "micro" of legitimacy: Toward a multilevel theory of the legitimacy process. *Academy of Management Review*, 40(1), 49-75.

Borgatti, S. P. (2002). NetDraw: Graph visualization software. Harvard: Analytic Technologies.

Borgatti, S. P., & Foster, P. C. (2003). The network paradigm in organizational research: A review and typology. *Journal of Management*, 29(6), 991-1013.

Borgatti, S. P., Everett, M. G., & Freeman, L. C. (2002). Ucinet for Windows: Software for social network analysis. Harvard: Analytic Technologies.

Bosma, N. S., & Levie, J. (2010). *Global Entrepreneurship Monitor 2009 Executive Report*, retrieved from file:///C:/Users/nu.2263/Downloads/GEM%202009%20Global%20Report%20Rev%20140410.pdf .

Brännback, M., Carsrud, A., & Renko, M. (2007). Exploring the born global concept in the biotechnology context. *Journal of Enterprising Culture*, 15(1), 79-100.

Carroll, G. R., & Hannan, M. T. (1989). Density dependence in the evolution of populations of newspaper organizations. *American Sociological Review*, 54(4), 524–41.

Cattani, G., Ferriani, S., Negro, G., & Perretti, F. (2008). The structure of consensus: Network ties, legitimation, and exit rates of US feature film producer organizations. *Administrative Science Quarterly*, 53(1), 145-182.

Cavusgil, S. T. (1984). Differences among exporting firms based on their degree of internationalization. *Journal of Business Research*, 12(2), 195-208.

Chetty, S., & Blankenburg Holm, D. B. (2000). Internationalisation of small to medium-sized manufacturing firms: a network approach. *International Business Review*, 9(1), 77-93.

Coleman, J. S., Katz, E., & Menzel, H. (1966). *Medical innovation: a diffusion study*. Indianapolis: Bobbs-Merrill Company.

Coombs, J. E., & Deeds, D. L. (2000). International alliances as sources of capital: Evidence from the biotechnology industry. *The Journal of High Technology Management Research*, 11(2), 235-253.

Cornelissen, J. P., & Clarke, J. S. (2010). Imagining and rationalizing opportunities: inductive reasoning & the creation & justification of new ventures. *Academy of Management Review*, 35(4), 539.

Coviello, N. E. (2006). The network dynamics of international new ventures. *Journal of International Business Studies*, 37(5), 713-731.

Coviello, N. E., & Cox, M. P. (2006). The resource dynamics of international new venture networks. *Journal of International Entrepreneurship*, 4(2-3), 113-132.

Coviello, N. E., & Munro, H. (1995). Growing the entrepreneurial firm: networking for international market development. *European Journal of Marketing*, 29(7), 49-61.

Coviello, N., & Munro, H. (1997). Network relationships and the internationalization process of small software firms. *International Business Review*, 6(4), 361-386.

Creed, W. D., Scully, M. A., & Austin, J. R. (2002). Clothes make the person? The tailoring of legitimating accounts and the social construction of identity. *Organization Science*, 13(5), 475-496.

Crick, D., & Jones, M. V. (2000). Small high-technology firms and international high-technology markets. *Journal of International Marketing*, 8(2), 63-85.

Cyert, R. M., & March, J. G. (1963). *A behavioral theory of the firm*. Prentice-Hall Inc, New Jersey, USA.

Dacin, M. T., Oliver, C., & Roy, J. P. (2007). The legitimacy of strategic alliances: An institutional perspective. *Strategic Management Journal*, 28(2), 169-187.

Deeds, D. L., & Hill, C. W. (1996). Strategic alliances and the rate of new product development: an empirical study of entrepreneurial biotechnology firms. *Journal of Business Venturing*, 11(1), 41-55.

Deeds, D. L., DeCarolis, D., & Coombs, J. (2000). Dynamic capabilities and new product development in high technology ventures: an empirical analysis of new biotechnology firms. *Journal of Business Venturing*, 15(3), 211-229.

Deephouse, D. L., & Suchman, M. (2008). Legitimacy in organizational institutionalism. In Greenwood, R., Oliver, C., Suddaby, R., & Sahlin-&ersson, K. (Eds.), *The Sage He&book of Organizational Institutionalism* (pp. 49-77), Thous& Oaks CA: Sage.

Delmar, F., & Shane, S. (2004). Legitimating first: Organizing activities & the survival of new ventures. *Journal of Business Venturing*, 19(3), 385-410.

Deloitte (2013). *2013 global life sciences outlook,* retrieved from http://www2.deloitte.com/global/en/pages/life-sciences-&-healthcare/articles/2013-global-ls-outlook.html.

DiMaggio, P., Powell, W. W. (1983). The iron cage revisited: Collective rationality and institutional isomorphism in organizational fields. *American Sociological Review*, 48(2), 147-60.

Dimitratos, P., Plakoyiannaki, E., Pitsoulaki, A., & Tüselmann, H. J. (2010). The global smaller firm in international entrepreneurship. *International Business Review*, 19(6), 589-606.

Djelic, M. L., & Quack, S. (2003). *Globalization and institutions*., Cheltenham: Edward Elgar.

Dowling, J., & Pfeffer, J. (1975). Organizational legitimacy: Social values and organizational behavior. *Pacific Sociological Review*, 18(1), 122-136

Dunning, J. H. (2009). The key literature on IB activities: 1960-2000. In Rugman, A. M. (Eds.), *The Oxford he&book of international business* (pp. 36-68), New York: Oxford University Press Inc.

Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of Management Review*, 14(4), 532-550.

Elfring, T., & Hulsink, W. (2003). Networks in entrepreneurship: The case of high-technology firms. *Small Business Economics*, 21(4), 409-422.

Elsbach, K. D., & Sutton, R. I. (1992). Acquiring organizational legitimacy through illegitimate actions: A marriage of institutional and impression management theories. *Academy of Management Journal*, 35(4), 699-738.

Eriksson, K., Johanson, J., Majkgard, A., & Sharma, D. D. (1997). Experiential knowledge and cost in the internationalization process. *Journal of International Business Studies*, 28(2), 337-360.

Ernst & Young (2015). *Biotechnology Industry Report, Beyond Borders, reaching new heights*, retrieved from http://www.ey.com/Publication/vwLUAssets/EY-beyond-borders-2015/$FILE/EY-beyond-borders-2015.pdf .

Eurobarometer (2010). *Biotechnology report* , retreived from http://ec.europa.eu/public_opinion/archives/ebs/ebs_341_en.pdf.

Eurofound (2012), *Born global: The potential of job creation in new international businesses*, Publications Office of the European Union, Luxembourg, retrieved from http://www.eurofound.europa.eu/publications/report/2013/labour-market-business/born-global-the-potential-of-job-creation-in-new-international-businesses.

Fontes, M., & Coombs, R. (2001). Contribution of new technology-based firms to the strengthening of technological capabilities in intermediate economies. *Research Policy*, 30(1), 79-97.

Freeman, J., Carroll, G. R., & Hannan, M. T. (1983). The liability of newness: Age dependence in organizational death rates. *American Sociological Review*, 48(5), 692-710.

Gadde, L. E., & Mattsson, L. G. (1987). Stability & change in network relationships. *International Journal of Research in Marketing*, 4(1), 29-41.

Garud, R., & Rappa, M. A. (1994). A socio-cognitive model of technology evolution: The case of cochlear implants. *Organization Science*, 5(3), 344-362.

Gassmann, O., & Keupp, M. M. (2007). The competitive advantage of early & rapidly internationalising SMEs in the biotechnology industry: A knowledge-based view. *Journal of World Business*, 42(3), 350-366.

Gassmann, O., & Reepmeyer, G. (2005). Organizing pharmaceutical innovation: from science□based knowledge creators to drug□oriented knowledge brokers. *Creativity and Innovation Management,* 14(3), 233-245.

George, G., Zahra, S. A., & Wood, D. R. (2002). The effects of business–university alliances on innovative output & financial performance: a study of publicly traded biotechnology companies. *Journal of Business Venturing*, 17(6), 577-609.

Granovetter, M. (1985). Economic action & social structure: the problem of embeddedness. *American Journal of Sociology*, 91(3), 481-510.

Greenwood, R., Hinings, C. R., & Whetten, D. (2014). Rethinking institutions and organizations. *Journal of Management Studies*, 51(7), 1206-1220.

Greenwood, R., Oliver, C., Suddaby, R., & Sahlin, K. (2008). *The Sage handbook of organizational institutionalism*. London: SAGE.

Grinstein, A., & Goldman, A. (2006). Characterizing the technology firm: An exploratory study. *Research Policy*, 35(1), 121-143.

Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In N. K. Denzin & Lincoln, Y. S. (Eds.), *Handbook of qualitative research* (pp. 105-117). Thousand Oaks, CA: Sage.

Haack, P., Pfarrer, M. D., & Scherer, A. G. (2014). Legitimacy-as-feeling: How affect leads to vertical legitimacy spillovers in transnational governance. *Journal of Management Studies*, 51(4), 634–666.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis*, New Jersey: Pearson

Hadjikhani, A., & Ghauri, P. N. (2001). The behaviour of international firms in socio-political environments in the European Union. *Journal of Business Research*, 52(3), 263-275.

Hallen, B. L., & Eisenhardt, K. M. (2012). Catalyzing strategies and efficient tie formation: how entrepreneurial firms obtain investment ties. *Academy of Management Journal*, 55(1), 35-70.

Hargadon, A. B., & Douglas, Y. (2001). When innovations meet institutions: Edison and the design of the electric light. *Administrative Science Quarterly*, 46(3), 476-501

Higgins, M. C., & Gulati, R. (2003). Getting off to a good start: The effects of upper echelon affiliations on underwriter prestige. *Organization Science*, 14(3), 244-263.

Hine, D., & Kapeleris, J. (2006). *Innovation and entrepreneurship in biotechnology, an international perspective: Concepts, theories and cases*. Cheltenham: Edward Elgar Publishing.

Huber, G. P., & Power, D. J. (1985). Research notes and communications retrospective reports of strategic-level managers: Guidelines for increasing their accuracy. *Strategic Management Journal,* 6(2), 171.

Hudson, B. A. & Okhuysen, G. (2009). Not with a ten foot pole: core-stigma, stigma transfer, and improbable persistence of men's bathhouses. *Organization Science*, 20, 134–53.

Hudson, B. A. (2008). Against all odds: a consideration of core-stigmatized organizations. *Academy of Management Review*, 33 (1), 252–66.

Ivanova, O., & Castellano, S. (2011). The impact of globalization on legitimacy signals: The case of organizations in transition environments. *Baltic Journal of Management*, 6(1), 105-123.

Jepperson, R. L. (1991). Institutions, institutional effects, and institutionalization. In W. W. Powell & P. J. DiMaggio (Eds.), *The new institutionalism in organizational analysis* (143–163), Chicago: University of Chicago Press.

Johanson, J. & Mattsson, L. G. (1988). Internationalization in industrial systems—a network approach. In Hood, N, & Vahlne, J. E. (Eds.), *Strategies in Global Competition* (287-314), London: Routledge.

Johanson, J., & Vahlne, J. E. (1990). The mechanism of internationalisation. *International Marketing Review*, 7(4), 11-24.

Johanson, J., & Vahlne, J. E. (2003). Business relationship learning & commitment in the internationalization process. *Journal of International Entrepreneurship*, 1(1), 83-101.

Johanson, J., & Vahlne, J. E. (2009). The Uppsala internationalization process model revisited: From liability of foreignness to liability of outsidership. *Journal of International Business Studies*, 40(9), 1411-1431.

Johanson, J., & Wiedersheim-Paul, G. (1975). The internationalization of the firm-Four Swedish cases. *Journal of Management Studies*, 12(3), 305-22.

Johnson, C., Dowd, T. J., & Ridgeway, C. L. (2006). Legitimacy as a social process. *Annual Review of Sociology*, 32, 53-78.

Jones, M. V. (1998). *International expansion of small high technology based firms: the role of external linkages in international growth & development* (Doctoral dissertation, University of Strathclyde).

Jones, M. V. (1999). The internationalization of small high-technology firms. *Journal of International Marketing*, 7(4), 15-41.

Jones, M. V., Coviello, N., & Tang, Y. K. (2011). International entrepreneurship research (1989–2009): a domain ontology and thematic analysis. *Journal of Business Venturing*, 26(6), 632-659.

Jones, M. V., Wheeler, C., & Dimitratos, P. (2011). Introduction in M. Jones, C. Wheeler, & P. Dimitratos (Eds.), *International entrepreneurship in the life sciences* (pp. 1-20), Cheltenham: Edward Elgar Publishing.

Jones, M.V., Vlachos, G., Wheeler, C., & Dimitratos, P. (2008). So you think you are born-global? A study of small, young firms in the life sciences industry. In Larimo, J. (Eds.) *Perspectives on Internationalization and International Management. Series* (32-47), Vaasa: Vaasan Yliopiston Julkaisuja.

Jöreskog, K. G., & Sörbom, D. (1993). LISREL 8: Structural equation modeling with the SIMPLIS command language. Scientific Software International.

K@W (2009) Globalization of Technology Ventures: Lessons from Israel, retrieved from http://knowledge.wharton.upenn.edu/article/globalization-of-technology-ventures-lessons-from-israel/.

Khaire, M. (2010). Young and no money? Never mind: The material impact of social resources on new venture growth. *Organization Science*, 21(1), 168-185.

Knight, G., & Cavusgil, S. T. (1996). The born global firm: a challenge to traditional internationalization theory, in C. R. Taylor, *Advances in International Marketing* (pp. 11-26), New York: JAI Press.

Kostova, T., & Zaheer, S. (1999). Organizational legitimacy under conditions of complexity: The case of the multinational enterprise. *Academy of Management Review*, 24(1), 64-81.

Kostova, T., Roth, K., & Dacin, M. T. (2008). Institutional theory in the study of multinational corporations: A critique and new directions. *Academy of Management Review*, 33(4), 994-1006.

Lamin, A., & Zaheer, S. (2012). Wall street vs. main street: Firm strategies for defending legitimacy and their impact on different stakeholders. *Organization Science*, 23, 47–66.

Laurell, H. (2015). *The role of industry context for new venture internationalization: Evidence from the medical technology sector* (Doctoral dissertation, Jönköping International Business School).

Lee, A. S., & Baskerville, R. L. (2003). Generalizing generalizability in information systems research. *Information Systems Research*, 14(3), 221-243.

Leedy, P.D., & Ormrod, J. E. (2010) *Practical Research: Planning and Design* (9th Ed.) New York: Merril.

Lim, L. P., Garnsey, E., & Gregory, M. (2006). Product and process innovation in biopharmaceuticals: a new perspective on development. *R&D Management*, 36(1), 27-36.

Lindstrand, A., Melén, S., & Nordman, E. R. (2011). Turning social capital into business: A study of the internationalization of biotech SMEs. *International Business Review*, 20(2), 194-212.

Löfgren, A. (2014). *International network competitiveness. Technical and foreign market knowledge development in international SME networks* (Doctoral dissertation, Stockholm School of Economics).

Lounsbury, M., & Glynn, M. A. (2001). Cultural entrepreneurship: Stories, legitimacy, and the acquisition of resources. *Strategic Management Journal*, 22(6□7), 545-564.

Macaulay, S. (1963). Non-contractual relations in business: A preliminary study. *American Sociological Review*, 28(1), 55-67.

Madsen, T. K., & Servais, P. (1997). The internationalization of born globals: an evolutionary process?. *International Business Review*, 6(6), 561-583.

March, J. G., & Simon, H. A. (1958). *Organizations*. Oxford: Wiley.

Marschan-Piekkari, R., Welch, C., Penttinen, H., & Tahvanainen, M. (2004). Interviewing in the multinational corporation: Challenges of the organisational context. In R., Marschan-Piekkari & C. Welch (Eds.), *Handbook of qualitative research methods for international business* (pp. 244-263), Cheltenham: Edward Elgar Publishing.

Mattsson, L. G., & Johanson, J. (1992). *Network positions and strategic action: an analytical framework*, In B. Axelsson & G. Easton (Eds), *Industrial Networks: A New View of Reality*. London: Routledge.

McFarland, R. G., Bloodgood, J. M., & Payan, J. M. (2008). Supply chain contagion. *Journal of Marketing*, 72(2), 63-79.

Mehta, S. S. (2008). *Commercializing successful biomedical technologies: basic principles for the development of drugs, diagnostics and devices*. Cambridge: Cambridge University Press.

Melen, S. (2009). New insights on the interntationalization process of SMEs: a study of foreign market knowledge development (Doctoral dissertation, Stockholm School of Economics).

Melén, S., & Nordman, E. R. (2009). The internationalisation modes of born globals: a longitudinal study. *European Management Journal*, 27(4), 243-254.

Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology*, 83(2), 340-363.

Milanov, H., & Fernhaber, S. A. (2009). The impact of early imprinting on the evolution of new venture networks. *Journal of Business Venturing*, 24(1), 46–61.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expe&ed sourcebook*. Thousand Oaks, CA: Sage.

Mitchell, T. R. (1985). An evaluation of the validity of correlational research conducted in organizations. *Academy of Management Review*, 10(2), 192-205.

Nagy, B. G., Pollack, J. M., Rutherford, M. W., & Lohrke, F. T. (2012). The influence of entrepreneurs' credentials and impression management behaviors on perceptions of new venture legitimacy. *Entrepreneurship Theory & Practice*, 36(5), 941-965.

National Science Board (NSF) (2012). Science and engineering indicators, retrieved from http://nsf.gov/statistics/seind12/pdf/seind12.pdf.

Navis, C., & Glynn, M. A. (2010). How new market categories emerge: Temporal dynamics of legitimacy, identity, and entrepreneurship in satellite radio, 1990–2005. *Administrative Science Quarterly*, 55(3), 439-471.

Nordman, E. R., & Melén, S. (2008). The impact of different kinds of knowledge for the internationalization process of born globals in the biotech business. *Journal of World Business*, 43(2), 171-185.

Nummela, N. (2004). Is the globe becoming small or is the small becoming global? Globalization & internationalizing SMEs. In Jones, M. V., & Dimitratos, P. (Eds.) *Emerging paradigms in international entrepreneurship* (pp. 128-151), Cheltenham: Edward Elgar Publishing.

Nummela, N., Nurminen, O. (2011). Partnership formation in small biotech companies. In Jones, M. V., Wheeler, C., & Dimitratos, P. (Eds.), *International entrepreneurship in the life sciences* (pp. 101-121), Cheltenham: Edward Elgar Publishing.

Ocasio, W. (1997). Towards an attention-based view of the firm. *Strategic Management Journal*, 18, 187-206.

Ondercin, H. L. (2004). External validity. In Lewis-Beck, M. S., Bryman, A., & Liao, T. (Eds.) *Encyclopedia of social science research methods*, (pp. 360-362), Thousand Oaks, CA: Sage.

Onetti, A., Zucchella, A., Jones, M. V., & McDougall-Covin, P. P. (2012). Internationalization, innovation and entrepreneurship: business models for new technology-based firms. *Journal of Management & Governance*, 16(3), 337-368.

Organization for Economic Cooperation & Development (OECD) (2005). OECD small and medium enterprise definition, retrieved from https://stats.oecd.org/glossary/detail.asp?ID=3123.

Organization for Economic Cooperation & Development (OECD) (2012). *OECD Work on Science, Technology, and Industry*, retrieved from http://www.oecd.org/sti/sti-brochure.pdf.

Organization for Economic Cooperation & Development (OECD) (2012). *Knowledge networks & markets in the life sciences*, retrieved from http://www.oecd.org/sti/sci-tech/knowledgenetworks&marketsinthelifesciences.htm.

Oviatt, B. M., & McDougall, P. P. (1994). Toward a theory of international new ventures. *Journal of international Business Studies*, 45-64.

Oviatt, B. M., & McDougall, P. P. (1999). A framework for understanding accelerated international entrepreneurship. *Research in Global Strategic Management*, 7(1), 23-40.

Owen-Smith, J., & Powell, W. W. (2001). To patent or not: Faculty decisions and institutional success at technology transfer. *The Journal of Technology Transfer*, 26(1-2), 99-114.

Owen-Smith, J., & Powell, W. W. (2008). Networks and institutions. In Greenwood, R., Oliver, C., Suddaby, R., & Sahlin-Andersson, K. (Eds.), *The Sage Handbook of Organizational Institutionalism* (pp. 596-623), Thousand Oaks, CA: Sage.

Owen-Smith, J., Cotton-Nessler, N., & Buhr, H. (2015). Network effects on organizational decision-making: Blended social mechanisms and IPO withdrawal. *Social Networks*, 41, 1-17.

Packalen, K. A. (2007). Complementing capital: The role of status, demographic features, and social capital in founding teams' abilities to obtain resources. *Entrepreneurship Theory & Practice*, 31(6), 873-891.

Parker, B. (1998). *Globalization and business practice: Managing across boundaries.* London: Sage.

Perez, M. P., & Sánchez, A. M. (2003). The development of university spin-offs: early dynamics of technology transfer and networking. *Technovation*, 23(10), 823-831.

Phiri, T., Jones, M. V., & Wheeler, C. (2004). Returning to the field in internationalization: an exploratory study of contemporary small firms in the advanced medical products industry. In Jones, M. V., Wheeler, C., & Dimitratos, P. (Eds.), *International entrepreneurship in the life sciences* (pp. 249-275), Cheltenham: Edward Elgar Publishing.

Pisano, G. P. (1991). The governance of innovation: vertical integration and collaborative arrangements in the biotechnology industry. *Research Policy*, 20(3), 237-249.

Podolny, J. M. (2001). Networks as the pipes and prisms of the market. *American Journal of Sociology*, 107(1), 33–60

Podsakoff, P. M., & Organ, D. W. (1986). Self-reports in organizational research: Problems and prospects. *Journal of Management*, 12(4), 531-544.

Pollock, T. G., & Rindova, V. P. (2003). Media legitimation effects in the market for initial public offerings. *Academy of Management Journal*, 46(5), 631-642.

Pontikes, E. G. (2012). Two sides of the same coin how ambiguous classification affects multiple audiences' evaluations. *Administrative Science Quarterly*, 57(1), 81–118.

Powell, W. W., & Colyvas, J. A. (2008). Microfoundations of institutional theory. In R. Greenwood, C. Oliver, K. Sahlin, & R. Suddaby (Eds), *The Sage handbook of organizational institutionalism* (276–298). London: Sage.

Powell, W. W., Koput, K. W., & Smith-Doerr, L. (1996). Interorganizational collaboration and the locus of innovation: Networks of learning in biotechnology. *Administrative Science Quarterly*, 41(1), 116-145.

Powell, W. W., White, D. R., Koput, K. W., & Owen□Smith, J. (2005). Network dynamics and field evolution: The growth of interorganizational collaboration in the life sciences. *American Journal of Sociology*, 110(4), 1132-1205.

PriceWaterhouseCoopers, L. L. C. (2012). *From vision to decision: Pharma 2020*, retrieved from http://www.pwc.com/gx/en/industries/pharmaceuticals-life-sciences/pharma-2020/vision-to-decision.html.

Rao, H. (1994). The social construction of reputation: Certification contests, legitimation, and the survival of organizations in the American automobile industry: 1895–1912. *Strategic Management Journal*, 15, 29–44.

Rao, R. S., Chandy, R. K., & Prabhu, J. C. (2008). The fruits of legitimacy: Why some new ventures gain more from innovation than others. *Journal of Marketing*, 72(4), 58-75.

Reid, S. (1983). Firm internationalization, transaction costs and strategic choice. *International Marketing Review*, 1(2), 44-56.

Reid, S. D. (1981). The decision-maker and export entry and expansion. *Journal of International Business Studies*, 12(2), 101-112.

Ridgeway, C. L., & Berger, J. (1986). Expectations, legitimation, and dominance behavior in task groups. *American Sociological Review*, 51(5), 603-617.

Robson, C. (2002). *Real world research* (2nd Ed.). Oxford: Blackwell publishers.

Rogers, E. M. (1995). *Diffusion of innovations*. New York: The Free Press.

Rosenzweig, P. M., & Singh, J. V. (1991). Organizational environments and the multinational enterprise. *Academy of Management Review*, 16(2), 340-361.

Rovira, E. (2009). *Interaction across borders: a study about experiential knowledge development in internationalizing SMESs* (Doctoral dissertation, Stockholm School of Economics).

Ruzzier, M., Hisrich, R. D., & Antoncic, B. (2006). SME internationalization research: past, present, and future. *Journal of Small Business & Enterprise Development*, 13(4), 476-497.

Santos, F. M., & Eisenhardt, K. M. (2009). Constructing markets and shaping boundaries: Entrepreneurial power in nascent fields. *Academy of Management Journal*, 52(4), 643-671.

Schweizer, R., Vahlne, J. E., & Johanson, J. (2010). Internationalization as an entrepreneurial process. *Journal of International Entrepreneurship*, 8(4), 343-370.

Scott, W. R. (1995). *Institutions and organizations*. Thousand Oaks, CA: Sage.

Scott, W. R. (2001). *Institutions and organizations* (2nd ed). Thousand Oaks, CA: Sage.

Scott, W. R. (2008). Approaching adulthood: the maturing of institutional theory. *Theory & Society*, 37(5), 427-442.

Shane, S., & Stuart, T. (2002). Organizational Endowments and the Performance of university start-ups. *Management Science*, 48(1), 154-170.

Sharma, D. D. (1992). *Experiential network knowledge in international consultancy*. (Doctoral dissertation, Uppsala University).

Sharma, D. D., & Blomstermo, A. (2003). The internationalization process of born globals: a network view. *International Business Review*, 12(6), 739-753.

Simba, A. & Ndlovu, T. (2014). The entrepreneurial marketing management and commercialization arrangements of born-global bio-enterprises: the case of UK companies, *Journal of Small Business and Entrepreneurship*, 27(2), 143-170.

Simon, H. A. (1947). 1997. *Administrative behavior*, New York: The Free Press.

Sine, W. D., David, R. J., & Mitsuhashi, H. (2007). From plan to plant: Effects of certification on operational start-up in the emergent independent power sector. *Organization Science*, 18(4), 578-594.

Singh, J.V., Tucker, D.J., & House, R.J., (1986). Organizational Legitimacy and The Liability Of Newness. *Administrative Science Quarterly*, 31(2), 171-193

Stinchcombe, A. L. (1965) Social structure & organizations. In: March J., G., (Eds.) *Handbook of Organizations* (pp. 142–193), Chicago, IL: R& McNally.

Stokcholm-Uppsala Life Science (SULS) (2014). Facts and figures on Sweden's number one life science region. Data from 2012 including comparison with 2011. Retrieved from file:///C:/Users/nu.2263/Downloads/14993_stockholm-uppsala_life_science_facts_&_figures_2014%20(1).pdf.

Street, C., Ward, K. (2009). Retrospective case study, in: Mills, A. J., Durepos, G., Wiebe, E. (Eds.) *Encyclopedia of case study research*. Sage Publications Inc, Thousand Oaks, CA, USA.

Stuart, T. E., Hoang, H., & Hybels, R. C. (1999). Interorganizational endorsements and the performance of entrepreneurial ventures. *Administrative Science Quarterly*, 44(2), 315-349.

Stuart, T. E., Ozdemir, S. Z., & Ding, W. W. (2007). Vertical alliance networks: The case of university–biotechnology–pharmaceutical alliance chains. *Research Policy*, 36(4), 477-498.

Suchman, M. C. (1995). Managing legitimacy: Strategic and institutional approaches. *Academy of Management Review*, 20(3), 571-610.

Suh, T., & Lyn, S. (2007). Defining and managing reputational capital in global markets. *Journal of MarketingTheory and Practice* (15), 205–217.

Sullivan Mort, G., Weerawardena, J. & Liesch, P. (2012). Advancing entrepreneurial marketing: Evidence from born global firms. *European Journal of Marketing*, 46(3/4): 542-561.

Swidler, A. (1986). Culture in Action: Symbols and Strategies. *American Sociological Review*, 51, 273–286.

Sytch, M., Gulati, R., & Hall, M. (2000). Markets as Networks: The dynamics and implications of interorganizational network structures.

Terreberry, S. (1968). The evolution of organizational environments. *Administrative Science Quarterly*, 12(4), 590-613.

Thompson, J. D. (1967). *Organizations in action: Social science bases of administration*. New Brunswick, New Jersey: Transaction Publishers.

Tolstoy, D. (2010). *International entrepreneurship in networks: the impact of network knowledge combination on SMEs' business creation in foreign markets* (Doctoral dissertation, Stockholm School of Economics).

Tolstoy, D., & Agndal, H. (2010). Network resource combinations in the international venturing of small biotech firms. *Technovation*, 30(1), 24-36.

Tornikoski, E. T., & Newbert, S. L. (2007). Exploring the determinants of organizational emergence: A legitimacy perspective. *Journal of Business Venturing*, 22(2), 311-335.

Tost, L. P. (2011). An Integrative Model of Legitimacy Judgments. *Academy of Management Review*, 36(4):686-710.

Turcan, R. V. (2013). International new venture legitimation: An exploratory study, *Administrative Sciences*, 3(4) , 237-265.

Überbacher, F. (2014). Legitimation of new ventures: A review and research programme. *Journal of Management Studies*, 51(4), 667-698.

Van de Ven, A. H. (2005). Running in packs to develop knowledge-intensive technologies. *MIS Quarterly*, 29(2), 365-377

Van den Bulte, C., & Lilien, G. L. (2001). Medical innovation revisited: Social contagion versus marketing effort. *American Journal of Sociology*, 106(5), 1409-1435.

Vinnova (2003). *Swedish biotechnology – scientific publications, patenting, and industrial development*, retrieved from http://www.vinnova.se/upload/EPiStorePDF/va-03-02.pdf.

Vinnova (2012). *Life science companies in Sweden, including a comparison with Denmark, retrieved from* http://www.vinnova.se/upload/EPiStorePDF/va-11-03.pdf.

Vinnova (2012). *Sweden's global connectivity in research. An analysis of international authorship*. Retrieved from http://www.vinnova.se/upload/EPiStorePDF/SwedensGlobalConnectivetyInResearch.pdf.

Vinnova (2014). *Global trends with local effects. Swedish life science industry 1998-2012*. Retrieved from http://www.vinnova.se/upload/EPiStorePDF/va_14_03.pdf.

Weick, K. E. (1995). *Sensemaking in organizations*. Thous& Oaks, CA: Sage.

Welch, L. S., & Luostarinen, R. K. (1993). Inward-outward connections in internationalization. *Journal of International Marketing*, 1(1), 44-56.

Williamson, O. E. (1975). *Markets and hierarchies*. In Williamson, O. E. (1996). Economic organization: The case of candor, *Academy of Management Review*, 21(1), 48-57.

Wright, R. W., & Ricks, D. A. (1994). Trends in international business research: Twenty-five years later. *Journal of International Business Studies*, 25(4), 687-701.

Yin, R. K. (2003). *Case study research design and methods* (3rd Ed.), Thousand Oaks, CA: Sage.

Young, S., Dimitratos, P., & Dana, L. P. (2003). International entrepreneurship research: what scope for international business theories?. *Journal of International Entrepreneurship*, 1(1), 31-42.

Zahra, S. A. (2005). A theory of international new ventures: a decade of research. *Journal of International Business Studies*, 36(1), 20-28.

Zelditch, M. (2001). Processes of legitimation: recent developments and new directions. *Social Psychology Quarterly*, 64(1), 4-17.

Zimmerman, M. A., & Zeitz, G. J. (2002). Beyond survival: Achieving new venture growth by building legitimacy. *Academy of Management Review*, 27(3), 414-431.

Zott, C., & Huy, Q. N. (2007). How entrepreneurs use symbolic management to acquire resources. *Administrative Science Quarterly*, 52(1), 70-105.

Zucker, L. G., Darby, M. R., & Armstrong, J. S. (2002). Commercializing knowledge: University science, knowledge capture, and firm performance in biotechnology. *Management Science*, 48(1), 138-153.

Appendix 1

INET Survey Questions– Internationalization in Business Networks

The survey consists of three parts. In Section A, we would like you to provide general information about your company. In Section B we would like you to choose and answer questions about a specific international business contact. In Section C we would like you to answer questions about the players related to the chosen international business contact.

A. **GENERAL**

How many patents does your company have? _____

How many new products/services have you launched in the past year? _____

How many new customers have you sold to in the past year? _____

How many new suppliers have you bought from in the past year? _____

In which year did you have your first foreign sale? _____

What percentage of the company's sales do the five largest customers account for: _____

What percentage of the company's purchases do the five largest suppliers account for: _____

	Not at all						Completely
We depend on our five largest suppliers for our product/service development	1	2	3	4	5	6	7
We depend on our five largest customers for our product/service development	1	2	3	4	5	6	7
Our customers depend on us for their product/service development	1	2	3	4	5	6	7
Our suppliers depend on us for their product/service development	1	2	3	4	5	6	7

We reach our customers abroad through (tick the options you use):

Direct export

Agent

Distributor

Wholly-owned subsidiary

Majority-owned subsidiary

50/50-owned subsidiary
Minority-owned subsidiary
Alliance/Business partner

What percentage of your sales is abroad_____ %

B. A SPECIFIC INTERNATIONAL BUSINESS CONTACT

Please choose an international business contact. The business contact must have resulted in actual business being done. Examples of business contacts could be:

Dealings with a distributor or another intermediary in another country
Dealings with a customer in another country

Choose a business contact that is important to your company. Please answer the following questions about the business contact:

What type of product/service is the business contact connected with? _____

What is the service/product ratio of the business contact?
0-20% service 21-40% 41-60% 61-80% 81-100%

In which year was the business contact initiated?
_____

Who initiated the communication?
Customer You Third party in host country Swedish third party Third party in another country

How or who is the business contact handled by?
Direct export
Agent
Distributor
Wholly-owned subsidiary
Majority-owned subsidiary
50/50-owned subsidiary
Minority-owned subsidiary
Alliance/Business partner

What is the foreign country? _____
How long have you had operations in the country? _____ years
What percentage of your sales does this market account for? _____ %

Have you developed or established new business relations by meeting people at the customer company in your spare time? Yes No

		Not at all Completely
Has the business contact resulted in new:	-products	1 2 3 4 5 6 7
	-techniques/technology	1 2 3 4 5 6 7
	-procedures	1 2 3 4 5 6 7
	-personnel	1 2 3 4 5 6 7
How important is the business contact to your company as regards	-knowledge	1 2 3 4 5 6 7
	-revenue	1 2 3 4 5 6 7

		Not at all Completely
The following factors have been obstacles in the relationship with the business contact:	-language	1 2 3 4 5 6 7
	-business culture	1 2 3 4 5 6 7
	-legislation	1 2 3 4 5 6 7
	-authorities	1 2 3 4 5 6 7

		Not at all Completely
The relationship with the business partner is characterized by:	-investments specific to this business partner	1 2 3 4 5 6 7
	-frequent exchange of information	1 2 3 4 5 6 7
	-the partner fulfilling its obligations to you	1 2 3 4 5 6 7
	-mutual adaptations	1 2 3 4 5 6 7
	-mutual investments	1 2 3 4 5 6 7
	-innovative knowledge development	1 2 3 4 5 6 7
	-innovative product development	1 2 3 4 5 6 7
	-general exchange of knowledge	1 2 3 4 5 6 7
	-joint problem-solving	1 2 3 4 5 6 7
The business partner is:	-easy to replace	1 2 3 4 5 6 7
	-important as a reference customer	1 2 3 4 5 6 7
	-a source of knowledge	1 2 3 4 5 6 7
	-a source of innovations	1 2 3 4 5 6 7
	-a source of capital	1 2 3 4 5 6 7

		Not at all						Completely
In the business relationship, how familiar is the business partner's:	-product	1	2	3	4	5	6	7
	-production process	1	2	3	4	5	6	7
	-service content	1	2	3	4	5	6	7
	-distribution method	1	2	3	4	5	6	7
	-knowledge	1	2	3	4	5	6	7
	-competence	1	2	3	4	5	6	7
	-method of solving problems	1	2	3	4	5	6	7
How does the business contact differ from the company's other contacts as regards:	-product	1	2	3	4	5	6	7
	-production process	1	2	3	4	5	6	7
	-service content	1	2	3	4	5	6	7
	-distribution method	1	2	3	4	5	6	7
We have invested in the relationship in the form of:	-time	1	2	3	4	5	6	7
	-adaptations	1	2	3	4	5	6	7
	-capital	1	2	3	4	5	6	7
	-personnel	1	2	3	4	5	6	7

		Not at all						Completely
The product/service you sell is	-imitable	1	2	3	4	5	6	7
	-adaptable	1	2	3	4	5	6	7
	-well-documented	1	2	3	4	5	6	7

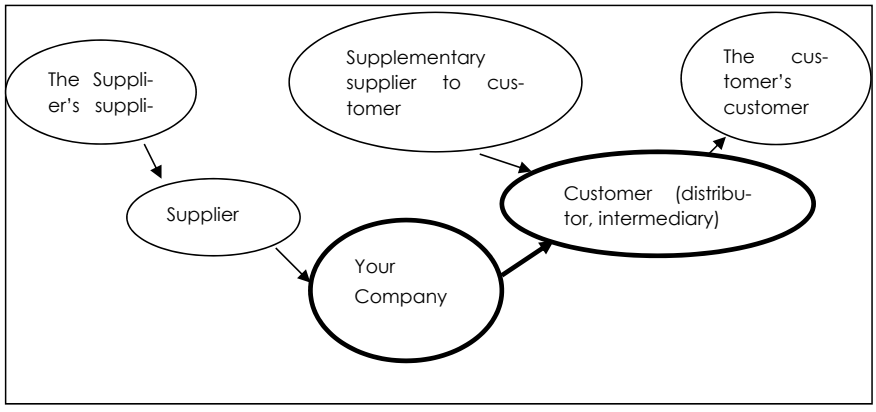
		Not at all						Completely
What sources of information were important in establishing the business contact?	-customers	1	2	3	4	5	6	7
	-suppliers	1	2	3	4	5	6	7
	-consultants	1	2	3	4	5	6	7
	-competitors	1	2	3	4	5	6	7
	-authorities	1	2	3	4	5	6	7
	-banks	1	2	3	4	5	6	7
	-databases	1	2	3	4	5	6	7
	-newspapers/magazines	1	2	3	4	5	6	7

How many times does your company have contact with this company via:	Daily	A week		A month		A quarter		No contact
		1	Several	1	Several	1	Several	
-personal meetings	☐	☐	☐	☐	☐	☐	☐	☐

-phone	☐	☐	☐	☐	☐	☐	☐	☐
-Internet	☐	☐	☐	☐	☐	☐	☐	☐
-e-mail	☐	☐	☐	☐	☐	☐	☐	☐
-intranet	☐	☐	☐	☐	☐	☐	☐	☐
-video conferencing	☐	☐	☐	☐	☐	☐	☐	☐

C. PLAYERS RELATED TO YOUR BUSINESS CONTACT IN THE BUSINESS NETWORK

Companies do not operate in isolation; instead they often have several related players, such as customers and suppliers, who they work with. A company and its related players can be said to be linked to each other in a business network. The diagram below shows an example of such a business network.



In this survey you are defined as the Company, the Supplier as your supplier of products/services and the Supplier's supplier as your supplier's supplier.

The customer can simply be a customer, a distributor or another intermediary. The customer's customer is this party's customer. The relationship between you and the customer is the business contact.

Supplementary supplier refers to a supplier that provides products/services that are essential for your customer to be able to use/refine your product/service.

We would now like you to answer the questions below bearing in mind the current players related to the chosen business contact.

We have divided these players into two categories: 1) players on the chosen business contact's market, i.e. local players 2) Swedish or international players from other markets than the chosen business contact's market.

(Later in the survey you will be asked about experiences of previous related players that have had an influence on the chosen business contact and if the business contact has led to new business relations.)

Current local players on the foreign market related to the business contact

If the question is not relevant to your company, please tick Not at all.

Local customer's customer		Not at all Completely
On the foreign market, how dependent is the chosen business contact on your most important local customer's customer	-product	1 2 3 4 5 6 7
	-research and development	1 2 3 4 5 6 7
	-willingness to collaborate	1 2 3 4 5 6 7
	-willingness to adapt	1 2 3 4 5 6 7
	-joint procedures	1 2 3 4 5 6 7
	-knowledge	1 2 3 4 5 6 7
	-modernity, original ideas, contribution to new business opportunities	1 2 3 4 5 6 7
	-social relations	1 2 3 4 5 6 7

How many times does your company have contact with this local customer's customer via:	Daily	A week		A month		A quarter		No contact
		1	Several	1	Several	1	Several	
-personal meetings	☐	☐	☐	☐	☐	☐	☐	☐
-phone	☐	☐	☐	☐	☐	☐	☐	☐
-Internet	☐	☐	☐	☐	☐	☐	☐	☐
-e-mail	☐	☐	☐	☐	☐	☐	☐	☐
-intranet	☐	☐	☐	☐	☐	☐	☐	☐
-video conferencing	☐	☐	☐	☐	☐	☐	☐	☐

Local customer's supplier of supplementary products and services		Not at all Completely
On the foreign market, how dependent is the chosen business contact on your customer's most important local supplier of supplementary products and ser-	-product	1 2 3 4 5 6 7
	-research and development	1 2 3 4 5 6 7
	-willingness to collaborate	1 2 3 4 5 6 7
	-willingness to adapt	1 2 3 4 5 6 7
	-joint procedures	1 2 3 4 5 6 7
	-knowledge	1 2 3 4 5 6 7

vices as regards:	-modernity, original ideas, contribution to new business opportunities				1 2 3 4 5 6 7			
	-social relations				1 2 3 4 5 6 7			
How many times does your company have contact with this supplier of supplementary products and services via:	Daily	A week		A month		A quarter		No contact
		1	Several	1	Several	1	Several	
-personal meetings	☐	☐	☐	☐	☐	☐	☐	☐
-phone	☐	☐	☐	☐	☐	☐	☐	☐
-Internet	☐	☐	☐	☐	☐	☐	☐	☐
-e-mail	☐	☐	☐	☐	☐	☐	☐	☐
-intranet	☐	☐	☐	☐	☐	☐	☐	☐
-video conferencing	☐	☐	☐	☐	☐	☐	☐	☐

Local supplier		Not at all Completely
On the foreign market, how dependent is the chosen business contact on your most important local supplier's	-product	1 2 3 4 5 6 7
	-research and development	1 2 3 4 5 6 7
	-willingness to collaborate	1 2 3 4 5 6 7
	-willingness to adapt	1 2 3 4 5 6 7
	-joint procedures	1 2 3 4 5 6 7
	-knowledge	1 2 3 4 5 6 7
	-modernity, original ideas, contribution to new business opportunities	1 2 3 4 5 6 7
	-social relations	1 2 3 4 5 6 7

How many times does your company have contact with this most important local supplier via:	Daily	A week		A month		A quarter		No contact
		1	Several	1	Several	1	Several	
-personal meetings	☐	☐	☐	☐	☐	☐	☐	☐
-phone	☐	☐	☐	☐	☐	☐	☐	☐
-Internet	☐	☐	☐	☐	☐	☐	☐	☐
-e-mail	☐	☐	☐	☐	☐	☐	☐	☐
-intranet	☐	☐	☐	☐	☐	☐	☐	☐
-video conferencing	☐	☐	☐	☐	☐	☐	☐	☐

Local supplier's supplier		Not at all Completely
On the foreign market, how dependent is the chosen business contact on your most important local supplier's supplier's	-product	1 2 3 4 5 6 7
	-research and development	1 2 3 4 5 6 7
	-willingness to collaborate	1 2 3 4 5 6 7
	-willingness to adapt	1 2 3 4 5 6 7
	-joint procedures	1 2 3 4 5 6 7
	-knowledge	1 2 3 4 5 6 7
	-modernity, original ideas, contribution to new business opportunities	1 2 3 4 5 6 7
	-social relations	1 2 3 4 5 6 7

How many times does your company have contact with this most important local supplier's supplier via:	Daily	A week		A month		A quarter		No contact
		1	Several	1	Several	1	Several	
-personal meetings	☐	☐	☐	☐	☐	☐	☐	☐
-phone	☐	☐	☐	☐	☐	☐	☐	☐
-Internet	☐	☐	☐	☐	☐	☐	☐	☐
-e-mail	☐	☐	☐	☐	☐	☐	☐	☐
-intranet	☐	☐	☐	☐	☐	☐	☐	☐
-video conferencing	☐	☐	☐	☐	☐	☐	☐	☐

Local competitor		Not at all Completely
On the foreign market, how dependent is the chosen business contact on your most important local competitor's	-product	1 2 3 4 5 6 7
	-pricing policy	1 2 3 4 5 6 7
	-research and development	1 2 3 4 5 6 7
	-modernity, original ideas, contribution to new business opportunities	1 2 3 4 5 6 7
	-social relations	1 2 3 4 5 6 7

How many times does your company have contact with this local competitor via:	Daily	A week		A month		A quarter		No contact
		1	Several	1	Several	1	Several	
-personal meetings	☐	☐	☐	☐	☐	☐	☐	☐
-phone	☐	☐	☐	☐	☐	☐	☐	☐
-Internet	☐	☐	☐	☐	☐	☐	☐	☐
-e-mail	☐	☐	☐	☐	☐	☐	☐	☐

Local consultant, authority, etc.		Not at all Completely
On the foreign market, how dependent is the chosen business contact on your most important local consultant or authority etc. on the chosen foreign market	-consultant	1 2 3 4 5 6 7
	-authority	1 2 3 4 5 6 7
	-bank	1 2 3 4 5 6 7
	-industry organizations	1 2 3 4 5 6 7

Current Swedish and other international players related to the business contact

What group of players is the chosen business contact most dependent on? Tick one option:
Your Swedish related players
Your International related players (excluding the chosen market)

Please answer the following questions bearing in mind the option chosen above.

Customer		Not at all Completely
To what extent is the chosen business contact dependent on your most important (Swedish or international) customer's	-product	1 2 3 4 5 6 7
	-research and development	1 2 3 4 5 6 7
	-willingness to collaborate	1 2 3 4 5 6 7
	-willingness to adapt	1 2 3 4 5 6 7
	-joint procedures	1 2 3 4 5 6 7
	-knowledge	1 2 3 4 5 6 7
	-modernity, original ideas, contribution to new business opportunities	1 2 3 4 5 6 7
	-social relations	1 2 3 4 5 6 7

How many times does your company have contact with this customer via:	Daily	A week		A month		A quarter		No contact
		1	Several	1	Several	1	Several	
-personal meetings	☐	☐	☐	☐	☐	☐	☐	☐
-phone	☐	☐	☐	☐	☐	☐	☐	☐
-Internet	☐	☐	☐	☐	☐	☐	☐	☐
-e-mail	☐	☐	☐	☐	☐	☐	☐	☐
-intranet	☐	☐	☐	☐	☐	☐	☐	☐
-video conferencing	☐	☐	☐	☐	☐	☐	☐	☐

Customer's customer		Not at all Completely
To what extent is the chosen business contact dependent on your most important (Swedish or international) customer's customer's	-product	1 2 3 4 5 6 7
	-research and development	1 2 3 4 5 6 7
	-willingness to collaborate	1 2 3 4 5 6 7
	-willingness to adapt	1 2 3 4 5 6 7
	-joint procedures	1 2 3 4 5 6 7
	-knowledge	1 2 3 4 5 6 7
	-modernity, original ideas, contribution to new business opportunities	1 2 3 4 5 6 7
	-social relations	1 2 3 4 5 6 7

How many times does your company have contact with this customer's customer via:	Daily	A week		A month		A quarter		No contact
		1	Several	1	Several	1	Several	
-personal meetings	☐	☐	☐	☐	☐	☐	☐	☐
-phone	☐	☐	☐	☐	☐	☐	☐	☐
-Internet	☐	☐	☐	☐	☐	☐	☐	☐
-e-mail	☐	☐	☐	☐	☐	☐	☐	☐
-intranet	☐	☐	☐	☐	☐	☐	☐	☐
-video conferencing	☐	☐	☐	☐	☐	☐	☐	☐

Customer's supplier of supplementary products and services		Not at all Completely
To what extent is the chosen business contact dependent on your most important (Swedish or international) customer's supplier of supplementary products and services as regards:	-product	1 2 3 4 5 6 7
	-research and development	1 2 3 4 5 6 7
	-willingness to collaborate	1 2 3 4 5 6 7
	-willingness to adapt	1 2 3 4 5 6 7
	-joint procedures	1 2 3 4 5 6 7
	-knowledge	1 2 3 4 5 6 7
	-modernity, original ideas, contribution to new business opportunities	1 2 3 4 5 6 7
	-social relations	1 2 3 4 5 6 7

How many times does your company have contact with this customer's supplier of supplementary products and services via:	Daily	A week		A month		A quarter		No contact
		1	Several	1	Several	1	Several	

-personal meetings	☐	☐	☐	☐	☐	☐	☐	☐
-phone	☐	☐	☐	☐	☐	☐	☐	☐
-Internet	☐	☐	☐	☐	☐	☐	☐	☐
-e-mail	☐	☐	☐	☐	☐	☐	☐	☐
-intranet	☐	☐	☐	☐	☐	☐	☐	☐
-video conferencing	☐	☐	☐	☐	☐	☐	☐	☐

Supplier								
					Not at all			Completely
To what extent is the chosen business contact dependent on your most important (Swedish or international) supplier's	-product				1 2 3 4 5 6 7			
	-research and development				1 2 3 4 5 6 7			
	-willingness to collaborate				1 2 3 4 5 6 7			
	-willingness to adapt				1 2 3 4 5 6 7			
	-joint procedures				1 2 3 4 5 6 7			
	-knowledge				1 2 3 4 5 6 7			
	-modernity, original ideas, contribution to new business opportunities				1 2 3 4 5 6 7			
	-social relations				1 2 3 4 5 6 7			
How many times does your company have contact with this supplier via:	Daily	A week		A month		A quarter		No contact
		1	Several	1	Several	1	Several	
-personal meetings	☐	☐	☐	☐	☐	☐	☐	☐
-phone	☐	☐	☐	☐	☐	☐	☐	☐
-Internet	☐	☐	☐	☐	☐	☐	☐	☐
-e-mail	☐	☐	☐	☐	☐	☐	☐	☐
-intranet	☐	☐	☐	☐	☐	☐	☐	☐
-video conferencing	☐	☐	☐	☐	☐	☐	☐	☐

Supplier's supplier			
		Not at all	Completely
To what extent is the chosen business contact dependent on your most important (Swedish or international) supplier's supplier	-product	1 2 3 4 5 6 7	
	-research and development	1 2 3 4 5 6 7	
	-willingness to collaborate	1 2 3 4 5 6 7	
	-willingness to adapt	1 2 3 4 5 6 7	
	-joint procedures	1 2 3 4 5 6 7	
	-knowledge	1 2 3 4 5 6 7	

	-modernity, original ideas, contribution to new business opportunities	1 2 3 4 5 6 7
	-social relations	1 2 3 4 5 6 7

How many times does your company have contact with this supplier's supplier via:	Daily	A week		A month		A quarter		No contact
		1	Several	1	Several	1	Several	
-personal meetings	☐	☐	☐	☐	☐	☐	☐	☐
-phone	☐	☐	☐	☐	☐	☐	☐	☐
-Internet	☐	☐	☐	☐	☐	☐	☐	☐
-e-mail	☐	☐	☐	☐	☐	☐	☐	☐
-intranet	☐	☐	☐	☐	☐	☐	☐	☐
-video conferencing	☐	☐	☐	☐	☐	☐	☐	☐

Competitor		Not at all Completely
To what extent is the chosen business contact dependent on your most important (Swedish or international) competitor's	-product	1 2 3 4 5 6 7
	-pricing policy	1 2 3 4 5 6 7
	-research and development	1 2 3 4 5 6 7
	-modernity, original ideas, contribution to new business opportunities	1 2 3 4 5 6 7
	-social relations	1 2 3 4 5 6 7

How many times does your company have contact with this competitor via:	Daily	A week		A month		A quarter		No contact
		1	Several	1	Several	1	Several	
-personal meetings	☐	☐	☐	☐	☐	☐	☐	☐
-phone	☐	☐	☐	☐	☐	☐	☐	☐
-Internet	☐	☐	☐	☐	☐	☐	☐	☐
-e-mail	☐	☐	☐	☐	☐	☐	☐	☐

Consultant, authority, etc.		Not at all Completely
To what extent is the chosen business contact dependent on your most important (Swedish or international)	-consultant	1 2 3 4 5 6 7
	-authority	1 2 3 4 5 6 7
	-bank	1 2 3 4 5 6 7
	-industry organizations	1 2 3 4 5 6 7

YOUR PREVIOUS EXPERIENCES OF PLAYERS FROM THE LOCAL AND OTHER MARKETS

In this section of the survey, we would like you to answer questions about your previous experiences of players on various markets (local, Swedish or international) which have had an influence on the chosen business contact. In other words, experiences that already existed in the company when you entered into the chosen business contact. This could, for example, relate to experiences of working with a particular type of player on a certain market which led you to decide to work with similar players this time too in the chosen business contact. They could also be experiences that have led you to work in a completely different way.

Your previous experiences of players on the business contact's local market:

		Not at all						Completely
To what extent is the chosen business contact dependent on your previous experiences of local customers'	-co-operation	1	2	3	4	5	6	7
	-adaptations	1	2	3	4	5	6	7
	-development of procedures	1	2	3	4	5	6	7
	-knowledge	1	2	3	4	5	6	7
	-modernity, original ideas, contribution to new business opportunities	1	2	3	4	5	6	7
To what extent is the chosen business contact dependent on your previous experiences of local customers' customers'	-co-operation	1	2	3	4	5	6	7
	-adaptations	1	2	3	4	5	6	7
	-development of procedures	1	2	3	4	5	6	7
	-knowledge	1	2	3	4	5	6	7
	-modernity, original ideas, contribution to new business opportunities	1	2	3	4	5	6	7
To what extent is the chosen business contact dependent on your previous experiences of local customers' suppliers of supplementary products and services'	-co-operation	1	2	3	4	5	6	7
	-adaptations	1	2	3	4	5	6	7
	-development of procedures	1	2	3	4	5	6	7
	-knowledge	1	2	3	4	5	6	7
	-modernity, original ideas, contribution to new business opportunities	1	2	3	4	5	6	7
To what extent is the chosen business contact dependent on your previous experiences of local suppliers'	-co-operation	1	2	3	4	5	6	7
	-adaptations	1	2	3	4	5	6	7
	-development of procedures	1	2	3	4	5	6	7
	-knowledge	1	2	3	4	5	6	7

	-modernity, original ideas, contribution to new business opportunities	1 2 3 4 5 6 7
To what extent is the chosen business contact dependent on your previous experiences of local suppliers' suppliers'	-co-operation	1 2 3 4 5 6 7
	-adaptations	1 2 3 4 5 6 7
	-development of procedures	1 2 3 4 5 6 7
	-knowledge	1 2 3 4 5 6 7
	-modernity, original ideas, contribution to new business opportunities	1 2 3 4 5 6 7

		Not at all Completely
To what extent is the chosen business contact dependent on your previous experiences of local competitors'	-product	1 2 3 4 5 6 7
	-pricing policy	1 2 3 4 5 6 7
	-modernity, original ideas, contribution to new business opportunities	1 2 3 4 5 6 7
To what extent is the chosen business contact dependent on your previous experiences of local	-consultants	1 2 3 4 5 6 7
	-authorities	1 2 3 4 5 6 7
	-banks	1 2 3 4 5 6 7
	-industry organizations	1 2 3 4 5 6 7

Your previous experiences of Swedish or international players:

With regard to previous experiences, what group of players is the chosen business contact most dependent on? Tick one option:

Your experiences of Swedish players

Your experiences of international players (excluding the chosen market)

Please answer the following questions bearing in mind the option chosen above.

		Not at all Completely
To what extent is the chosen business contact dependent on your previous experiences of Swedish or international customers'	-co-operation	1 2 3 4 5 6 7
	-adaptations	1 2 3 4 5 6 7
	-development of procedures	1 2 3 4 5 6 7
	-knowledge	1 2 3 4 5 6 7
	-modernity, original ideas, contribution to new business opportunities	1 2 3 4 5 6 7

To what extent is the chosen business contact dependent on your previous experiences of Swedish or international customers' customers'	-co-operation	1 2 3 4 5 6 7
	-adaptations	1 2 3 4 5 6 7
	-development of procedures	1 2 3 4 5 6 7
	-knowledge	1 2 3 4 5 6 7
	-modernity, original ideas, contribution to new business opportunities	1 2 3 4 5 6 7
To what extent is the chosen business contact dependent on your previous experiences of Swedish or international customers' suppliers of supplementary products and services'	-co-operation	1 2 3 4 5 6 7
	-adaptations	1 2 3 4 5 6 7
	-development of procedures	1 2 3 4 5 6 7
	-knowledge	1 2 3 4 5 6 7
	-modernity, original ideas, contribution to new business opportunities	1 2 3 4 5 6 7
To what extent is the chosen business contact dependent on your previous experiences of Swedish or international suppliers'	-co-operation	1 2 3 4 5 6 7
	-adaptations	1 2 3 4 5 6 7
	-development of procedures	1 2 3 4 5 6 7
	-knowledge	1 2 3 4 5 6 7
	-modernity, original ideas, contribution to new business opportunities	1 2 3 4 5 6 7

		Not at all						Completely
To what extent is the chosen business contact dependent on your previous experiences of Swedish or international **suppliers' suppliers'**	-co-operation	1	2	3	4	5	6	7
	-adaptations	1	2	3	4	5	6	7
	-development of procedures	1	2	3	4	5	6	7
	-knowledge	1	2	3	4	5	6	7
	-modernity, original ideas, contribution to new business opportunities	1	2	3	4	5	6	7
To what extent is the chosen business contact dependent on your previous experiences of Swedish or international **competitors'**	-product	1	2	3	4	5	6	7
	-pricing policy	1	2	3	4	5	6	7
	-modernity, original ideas, contribution to new business opportunities	1	2	3	4	5	6	7
To what extent is the chosen business contact dependent on your previous experiences of	-consultants	1	2	3	4	5	6	7
	-authorities	1	2	3	4	5	6	7
	-banks	1	2	3	4	5	6	7

Swedish or international	-industry organizations	1 2 3 4 5 6 7

NEW BUSINESS RELATIONS

Has the chosen business contact led to a business relation arising with

New international customers?

No Yes How many?.....

New local customers on the chosen market?

No Yes How many?.....

New international suppliers?

No Yes How many?.....

New local suppliers on the chosen market?

No Yes How many?.....

To what extent have you tried to create new business relations with the following in the business contact?

	Small Large
-New international customers	1 2 3 4 5 6 7
-New local customers on the chosen market	1 2 3 4 5 6 7
-New international suppliers	1 2 3 4 5 6 7
-New local suppliers on the chosen market	1 2 3 4 5 6 7

Appendix 2

Interview guide

Interviewee background	
	Have you been with the firm since the start and if so, have your responsibilities changed since then or since you joined the firm?
	What is your professional & educational background? How many years of industry experience?
	What is your professional & educational background? How many years of industry experience?
Firm background	
	When was the firm founded and why?
	What is the professional and educational background of the founders?
	Can you tell us the organization of the firm now (How many employees, how do R&D, production, sales, marketing and distribution is organized in the company?)
	Can you describe the characteristics of your product (Price sensitivity, local and global competitive advantage)?
	How many patents do you hold? (Issued locally and abroad?)
	How large are the firm's foreign sales today (% of total and foreign sales)?
	Who are your customers (Domestic, foreign or international? Size? Few or many? New or old? Type of organization)?
	How do you find/access to your customers?
	Who are your competitors (Local, global, size? Do you have a number of major competitors or more general? How do you enhance your knowledge about your competitors? Does your firm have personal contact with other companies/ competitors) within your business)?
	Who are your financiers (loan, VC, equity, sales etc.)?
Internationalization/ Business processes	
	What got your internationalization started?
	When did you decide to expand internationally? Did the firm have specific market in mind even before internationalized? Why was this particular market targeted?
	Where did you acquire the knowledge necessary for business development (regulations, patenting, supporting organizations etc.)?

	First foreign customer: Who, when and how? Which organizations/actors were specifically involved in the creation of relationships between your firm and your foreign customers? Were there any existing contacts or relationships between individuals in the firm's management and players in the market? Personal relationships, marketing efforts, initiation, first contact etc.
	How did the firm first establish itself in the foreign market (via licensing, distributor, exports, FDI, sales subsidiary, percentage of subsidiary etc.)?
	Have there been any institutional barriers to foreign markets that have had a negative impact on the firm?
	Did your firm benefit/ detriment any country of origin effects?
	How has your international operations developed? When did the firm enter the next foreign market, why and what was the establishment mode?
	What is the mode of the ongoing international business (Direct export, agent, distributor, subsidiary, alliance/business partner)?
	Which countries is your business involved now? In which countries are your three most important customers?
Legitimacy	
	What kind of business partners do you have (Customers, suppliers, manufacturing, marketing, distributors, licensees or agreement holders, competitors, financiers, individual actors, institutional organizations, collaborators in terms of R&D and clinical trial partners: pharmaceuticals, CROs, universities, clinics, research institutes, consultants, business labs, industry associations etc.?
	Do you perceive your firm central/more connected to the industry locally or globally (higher number of relationships) compared to your counterparts and competitors?
	Do you think diversity of organizations in your firm's business network have effect on your business?
	Do you perceive holding any of your network ties bring you any specific advantage among your counterparts within the industry (legitimacy, reputation)? Which tie provides you the highest value in this sense?
	Is there anything that prevents you from attaining the network you want?
	Are there any events specific such as trade shows, conferences etc. or any specific ties with an organization or published paper with that you think that brings legitimacy to your business (Especially from the perspectives of customers, potential employees, financiers etc.)?
	Do you see/experience uniformity in the mindsets of life science firms when it comes to patterns of doing business (locally and globally)?
	What do you think are the most specific characteristics of a successful international life science firm should have?

	Which are the institutional organizations that have the biggest influence on your business? To what extent do you have interaction with those organizations (Domestic, Foreign, International; FDA, research funding agencies, universities, business labs, patent office, industry associations, banks, etc.)?
	How do you think market has changed in last 5/10 years (Rules, norms and dominant actors)? Adaptations to changes? How?

Appendix 3

Information about the articles

Article 1: Managing institutional impediments through relationships and networks
Authors: Angelika Lindstrand, Kent Eriksson, & Nurgül Özbek
Full paper admitted to and presented at the competitive sessions of European International Business Academy (EIBA) Conference, 2012, Brighton, UK & AIB Conference, 2013, Istanbul, Turkey
Article 2: International new venture legitimation: A multi-layered framework
Author: Nurgül Özbek
Submitted to "*Journal of Small Business and Enterprise Development*", in the first review round.
Earlier version of the paper admitted to and presented at European Group of Organizational Studies (EGOS) Conference, 2015, Athens, Greece
Article 3: Legitimation network paths: Relational and dynamic understanding of young life science firms' legitimation
Author: Nurgül Özbek
Submitted to "*European Management Journal*", in the first review round.
Earlier version of the paper admitted to and presented at the 2nd International Entrepreneurship workshop, 2014, Edinburgh, UK
Article 4: Legitimacy-seeking practices during international venturing of small life science firms
Authors: Nurgül Özbek & Angelika Lindstrand
Earlier version of the paper admitted to and presented at the interactive session of Academy of International Business (AIB Conference), 2014, Vancouver, Canada

PART II: The Articles