

# New Insights on the Internationalisation Process of SMEs

A Study of Foreign Market Knowledge Development

Sara Melén



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EFI THE ECONOMIC RESEARCH INSTITUTE



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## *PREFACE*

This report is a result of a research project carried out at the Centre for Marketing, Distribution and Industry Dynamics at the Economic Research Institute at the Stockholm School of Economics.

This volume is submitted as a doctor's thesis at the Stockholm School of Economics. As usual at the Economic Research Institute, the author has been entirely free to conduct and present her research in her own ways as an expression of her own ideas.

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## **PART 1: SUMMARY OF THE THESIS**



## INTRODUCTION

The past two decades have witnessed an increase in the number of small and medium-sized enterprises (SMEs) that engage in foreign market operations (OECD, 2002). Changes in market conditions—as well as advances in transportation and communication technology that have made information more readily and rapidly accessible to everyone—have made it easier for small firms to engage in foreign operations (Knight et al., 2004; Oviatt and McDougall, 1997). The increasing number of SMEs that engage in foreign market operations has created growing interest amongst academic researchers in the topic of SMEs' internationalisation process.

Until the 1990s, the common view within SME research was that SMEs' size limitations and newness constrained their possibilities for expanding their operations abroad (see Coviello and McAuley, 1999). Compared with large firms, SMEs have limited financial and managerial resources, as well as limited network and information resources. Because of these factors, SMEs were thought to be unlikely to internationalise except through a slow process in which they increased their resource commitments to foreign markets in a gradual series of steps (e.g., Bilkey and Tesar, 1977). Moreover, an implicit assumption was that a firm started to develop its business in domestic markets before operating abroad.

During the 1990s, studies started to present a different view of SMEs' internationalisation (Knight and Cavusgil, 1996; McDougall et al., 1994). These studies showed that some SMEs began operating abroad from inception or soon thereafter. These firms often had limited experience operating in domestic markets prior to the start of foreign market operations. Compared with the conventional view, these firms demonstrated a more rapid internationalisation with rapid resource commitments to foreign market operations. Size and resource limitations were not shown to be a constraint for their internationalisation. These SMEs were often started by individuals who had international experience from prior employment and a personal network of relationships, which was useful for the initial internationalisation of the firm (Madsen and Servais, 1997). To distinguish these SMEs, they were given labels such as *born globals* (Knight and Cavusgil, 1996), *global start-ups* (Oviatt and McDougall, 1994) and *international new ventures* (INVs) (Oviatt and McDougall, 1994).<sup>1</sup>

Several studies examining the internationalisation of SMEs during the past decade and a half have argued that born globals represent an increasingly

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<sup>1</sup>Although I consider those labels interchangeable, I use the term *born globals* in this thesis when referring to early and rapidly internationalising SMEs.

distinctive pattern of the internationalisation process of some SMEs in comparison to other types of businesses (Bell et al., 2003; Knight and Cavusgil, 1996). In 1996, Knight and Cavusgil noted ‘the recent emergence in large numbers of a relatively new type of firm: the “Born Global”’ (p. 12). However, whether a born global firm represents a new phenomenon or simply one that was subsumed within the wider literature of firm growth and internationalisation is still a question for debate (Autio et al., 2000; Jones, 1999).

The discrepancy within the field regarding views about the internationalisation process of SMEs has given attention to new research questions and missing links in existing literature. As early as 1997, Madsen and Servais (1997) called for further research into the backgrounds of the founders of born global firms because these individuals’ prior experience and knowledge, as well as their personal networks of relationships, were shown to be important in their firms’ internationalisation. Reuber and Fischer (1997), in a similar way, argued that in newer and smaller firms, the knowledge of the top decision maker(s) is likely to be more predictive of, and influential on, patterns of internationalisation in comparison to determinants such as firm size and domestic track record. Studies in the field have continued to emphasise the need for more research that explores these issues in internationalising SMEs (Andersson and Wictor, 2003; Crick and Jones, 2000; Sapienza et al., 2006). What the abovementioned studies indicate is that to obtain a deeper understanding of how this individual-level knowledge relates to an SME’s internationalisation, there seems to be much to gain from extending the analytical perspective to a phase prior to the start of the firm. Scholars in the research field have also acknowledged the need for such research. In their article on the accelerated internationalisation of firms, Mathews and Zander (2007) claim that ‘Internationalisation should be perceived as a process that does not start with the firm’s first engagements in foreign markets, but has an important and potentially very influential pre-venture history’ (p. 396). Similar views are presented by Coviello (2006), who is interested in networks of INVs: ‘This suggests a need to understand INV networks at not only internationalization and pre-internationalization, but also pre-founding’ (p. 714).

As demonstrated by the previously mentioned studies, little is still known about the experiences and knowledge that key individuals developed from activities during prior employment, as well as from personal networks, and how those relate to an SME’s initial operations abroad and

internationalisation behaviour. In this respect, our understanding of SMEs' internationalisation process is limited.

Existing studies within the field have also acknowledged that much of the current research on born globals' internationalisation has been concerned primarily with the existence of these firms and their initial foreign market operations (Acedo and Jones, 2007). Because less attention has been given to activities that take place after born globals' initial foreign market operations, we still know little about the behaviour of these firms in their continued internationalisation. This gap in existing research has been acknowledged by Liesch et al. (2007), who raise the following question: 'What happens to early and rapidly internationalizing firms after they make their initial forays into international markets?' (p. 234).

The research gaps identified in the literature indicate that our understanding of SMEs' internationalisation process is still limited. In this thesis, I seek to advance the understanding of the internationalisation process of SMEs by extending the analysis of SMEs' internationalisation to a phase prior to their establishment and by continuing to follow these firms during their operations in foreign markets.

### **Understanding the internationalisation process of firms**

One theory that has been given substantial attention in studies of firms' internationalisation process is behavioural internationalisation process theory. Based on the behavioural theory of the firm (Cyert and March, 1963) and the Penrose (1959) theory of the growth of the firm, behavioural internationalisation process models elaborate on changes in firms' internationalisation behaviour (Bilkey and Tesar, 1977; Johanson and Vahlne, 1977). One of the most often cited and used process models is the Uppsala internationalisation process model, often referred to as the *Uppsala model* (Johanson and Vahlne, 1977). Compared with other behavioural internationalisation process models (Bilkey and Tesar, 1977; Reid, 1981), this model discusses more deeply the dynamic characteristics of knowledge in the internationalisation process. Internationalisation is viewed as the process of accumulating knowledge about markets and institutions abroad. More specifically, the critical foreign market knowledge in the internationalisation process is experienced based and is developed during a firm's operations in foreign markets. This kind of foreign market knowledge, referred to as *experiential knowledge*, is the most critical resource in a firm's internationalisation because it reduces the firm's uncertainty about internationalisation. This knowledge also enables a firm to perceive

opportunities in foreign markets and commit resources to these opportunities. The foreign market knowledge considered important for an internationalising firm has been shown to be composed of both a market-specific knowledge and a more general knowledge about how to internationalise (Barkema et al., 1996; Barkema and Vermeulen, 1998; Blomstermo et al., 2004a; Eriksson et al., 1997). The market-specific experiential knowledge includes knowledge about customers, competitors and partners in a specific market, as well as knowledge about laws, governments, and norms in that market. The general kind of foreign market knowledge is a firm's knowledge about how to internationalise, including how to organise and develop a firm's foreign business operations. This knowledge, in other words, concerns a firm's ability to know how to search in specific foreign markets but does not concern knowledge that is specific to a particular market (Eriksson et al., 1997). In this way, the general kind of foreign market knowledge, often referred to as *internationalisation knowledge* or *international knowledge*, has been shown to be antecedent to a firm's ability to develop market-specific knowledge.

When the Uppsala model was later integrated with a business network approach, firm internationalisation was shown to take place within a network of business relationships with actors such as customers, suppliers, distributors and competitors (Eriksson et al., 1998; Johanson and Vahlne, 2003; Lindstrand, 2003a). By integrating the two theoretical perspectives, it was shown that firms developed foreign market knowledge in their interactions within business relationships to customers, suppliers, and other business actors.

### **Understanding the internationalisation process of SMEs**

Behavioural internationalisation process theory, and the Uppsala model specifically, has influenced research on SME internationalisation (Coviello and McAuley, 1999; Sapienza et al., 2006). Studies within the field have concluded that foreign market knowledge is a critical resource in SME internationalisation (Autio et al., 2000; Coviello and Munro, 1997; Liesch and Knight, 1999; Sharma and Blomstermo, 2003). This knowledge is critical because it allows these firms to engage in further internationalisation (Sharma and Blomstermo, 2003). Research has also shown that SMEs' foreign market knowledge has a positive effect on their international performance (Yli-Renko et al., 2002). These studies, therefore, suggest that a deeper understanding of SMEs' internationalisation process, as well as further insights into how SMEs succeed in internationalising, can be gained by exploring how these firms develop foreign market knowledge in their internationalisation. Such research has been called for (Autio, 2005; Zahra, 2005), but few studies have explored

how SMEs develop foreign market knowledge in their internationalisation process, acknowledging their initial as well as continued internationalisation. At the same time, researchers have highlighted a need for the development of theories that would underpin this research. The research contributions presented by Yli-Renko et al. (2002) pointed out a need for more research to develop a knowledge-based theory of firm internationalisation.

SME research has shown that a firm's use of its business network can facilitate its internationalisation by providing opportunities in foreign markets and access to resources (Chetty and Campbell-Hunt, 2003; Coviello and Munro, 1997). Studies have also demonstrated the importance of the personal networks and experiences that founders and managers (referred to in this thesis as *key individuals*) have often developed from activities during prior employment (Andersson and Wictor, 2003; Crick and Jones, 2000; Madsen and Servais, 1997). Crick and Jones (2000) showed that SMEs that were founded by key individuals with international experience found it easier to develop the necessary resources in their firms' initial international operations. Andersson and Wictor (2003) found that if key individuals in a born global firm have a personal network that is useful for the firm, it can help the firm gain access to the necessary resources in its internationalisation.

Because the Uppsala model uses the firm as the unit of analysis, this theory does not capture the means of developing foreign market knowledge that is related to key individuals in SMEs. The business network approach, in a similar way, does not enable an analysis on the level of key individuals. This, in turn, points to a need for further model development and research. It also indicates that if behavioural internationalisation process theory has not considered the individual in modelling firms' knowledge development, important elements in SMEs' internationalisation process may have been neglected. One way to contribute to SME literature would thus be to develop behavioural internationalisation process theory to enable the analysis of how SMEs develop foreign market knowledge during their internationalisation process.

By developing behavioural internationalisation process theory in this manner, this thesis aims to contribute to the further understanding of the internationalisation process of SMEs and to fill those research gaps previously identified. In so doing, I will add new theoretical perspectives to behavioural internationalisation process theory and the Uppsala model's view of knowledge development.

One theory that provides useful insights and contributes to the further development of the Uppsala model's view on knowledge development is social

network theory (Burt, 1992; Coleman, 1988, 1990). The concepts of social and human capital, developed within social network theory, allow for analyses of key individuals' personal networks and experiences and how they are used in an SME's internationalisation process. By using social network theory together with business network theory, this thesis can provide a broader perspective for analysing how SMEs develop foreign market knowledge from their networks.

Behavioural internationalisation process theory, and the Uppsala model specifically, elaborates on a firm's ability to identify opportunities in foreign markets. The Uppsala model regards a firm's foreign market knowledge as a prerequisite in the process of identifying opportunities. One theory that has given an enhanced understanding of the process of opportunity identification is the Austrian school of entrepreneurship (Kirzner, 1997; Shane, 2000). The Austrian school regards knowledge as a prerequisite for discovering opportunities, which relates the Uppsala model to this theoretical school. In contrast to the Uppsala model, however, the Austrian school focuses on the individual entrepreneur in the analysis of opportunity discovery. The theoretical perspective provided by the Austrian school can thereby contribute new insights into behavioural internationalisation process theory by enabling analysis of how key individuals' knowledge relates to an SME's discovery of foreign market opportunities in the internationalisation process. To bring individual-level knowledge and firm-level knowledge together in analysing SMEs' internationalisation behaviour, organisational learning theory (Huber, 1991; Levitt and March, 1988) can provide useful frameworks that add new insights into behavioural internationalisation process theory.

### **Purpose of this thesis**

By adding new theoretical perspectives to behavioural internationalisation process theory and the Uppsala model's view of knowledge development, this thesis seeks to develop new insights into and a deeper understanding of the internationalisation process of SMEs. The general purpose of this thesis is to *develop a deeper understanding of the internationalisation process of SMEs by studying how they develop foreign market knowledge during this process.*

To accomplish this goal, I have chosen to illustrate the internationalisation process by dividing it into three phases: *the pre-firm internationalisation phase, the initial internationalisation phase and the continued internationalisation phase* (see Figure 1). I draw on the suggestions of Coviello (2006) and Mathews and Zander (2007) to begin the analysis in the pre-firm internationalisation phase. This phase includes those activities that have been carried out by key individuals prior to the establishment of a firm

and that have influenced their development of experiential knowledge and personal networks. The pre-firm internationalisation phase ends when the firm is established and the initial internationalisation phase begins. The initial internationalisation phase captures activities related to a firm’s first operations abroad. The third phase, the continued internationalisation phase, captures activities that take place after a firm’s first foreign operations. For those SMEs that are characterised as born global firms, the initial internationalisation phase is relatively short because such firms start operating abroad soon after their establishment. Other SMEs experience a longer initial internationalisation phase in which operations in domestic markets take place prior to their first foreign market operations.



**Figure 1** The three phases of the internationalisation process.

On the basis of the three phases of the internationalisation process, illustrated in Figure 1, three research questions are developed and answered in this thesis.

*How do SMEs use their key individuals’ experiential knowledge, developed in the pre-firm internationalisation phase, in their initial internationalisation phase?*

Previous SME literature has demonstrated that the experiences and knowledge that key individuals in these firms have developed during prior employment are often used in their firms’ initial operations in foreign markets (Andersson and Wictor, 2003; Crick and Jones, 2000). Studies have emphasised that key

individuals' experiences in the particular industry in which their new firm operates are important for the internationalising SME (Madsen and Servais, 1997). Particular attention has been given to key individuals' experience in international business and operations abroad (Crick and Jones, 2000; Madsen and Servais, 1997; McDougall et al., 1994; Reuber and Fischer, 1997). Crick and Jones (2000) showed that this international experience of key individuals contributed to managers' decisions to engage in foreign market operations within a year after their companies were founded. In their review of born global studies, Madsen and Servais (1997) suggested that as founders have prior acquired experiential knowledge about foreign markets, this knowledge will increase the new firm's opportunities to engage in foreign operations. Despite existing research, additional research has been called for that explores in greater depth the kinds of individual-level knowledge that are important for the internationalisation process of these firms (Autio, 2005). Sapienza et al. (2006) also highlighted that the effect of prior managerial experience on the outcomes of the initiation of the internationalisation process remains unclear. In this thesis, I aim to advance the understanding of key individuals' experiences and knowledge by analysing their experiential knowledge, which has been developed from activities during a pre-firm internationalisation phase and is used in the firm's initial internationalisation phase. I specifically explore what kinds of key individual experiential knowledge are used and how they relate to a firm's development of foreign market knowledge and its behaviour in the initial internationalisation phase, in terms of its ability to identify opportunities in foreign markets and its speed of internationalisation.

*How do SMEs develop foreign market knowledge from their key individuals' personal networks of relationships in their initial internationalisation phase?*

Previous research about SMEs has demonstrated that the personal networks developed by key individuals are important for their firms' initial operations in foreign markets (Crick and Jones, 2000; Ellis, 2000; Madsen and Servais, 1997). McDougall et al. (1994) demonstrated that the studied firms were started by entrepreneurs who had developed a worldwide network consisting of highly successful individuals. In addition to providing advice, these personal relationships often helped the newly started firms in identifying opportunities in foreign markets. Research on born globals, in particular, has emphasised the importance of focusing on understanding the personal networks of key individuals (Andersson and Wictor, 2003), thus providing evidence that these networks are important in an SME's initial internationalisation phase. Crick and Spence (2005) confirmed the usefulness of key individuals' personal

networks for high-tech SMEs' internationalisation. Their study, however, also showed that these networks can lose their usefulness during the firm's internationalisation process. In such a situation, the firm can recruit new managers who have new personal network relationships that are useful for the firm.

Existing studies of both born globals and other SMEs show the importance of understanding the personal networks of those key individuals founding the firm and those key individuals recruited later to the firm. In this thesis, I aim to advance the understanding of the importance of such personal networks by describing them in greater depth. I specifically explore how SMEs use their key individuals' personal networks to develop foreign market knowledge in their initial internationalisation phase and the challenges involved in these activities. I also explore how the use of personal networks for development of foreign market knowledge relates to the firm's internationalisation behaviour in terms of the speed of internationalisation.

*How do SMEs develop foreign market knowledge from their business network of relationships in their continued internationalisation phase?*

SME literature has shown that a firm's business network is important for its development of foreign market knowledge in the initial as well as continued internationalisation phases (Chetty and Blankenburg Holm, 2000; Coviello and Munro, 1997). However, if an SME experiences a rapid internationalisation, even more pressure is placed on a firm to use its business network for accessing foreign market knowledge in the internationalisation (Chetty and Campbell-Hunt, 2003). In comparison to studies of other SMEs, born global studies have paid less attention to the business network of relationships and how born globals develop foreign market knowledge from such networks. I find that this missing link in existing born global research is related to the lack of attention paid to these firms' continued internationalisation phase. Business network relationships take time to develop (Johanson and Mattsson, 1987); thus, a deeper understanding of how born globals' develop foreign market knowledge from their business network of relationships requires an analysis that is extended to the continued internationalisation of these firms.

By following SMEs into their continued internationalisation phase, I will provide an enhanced understanding of these firms' use of their business network of relationships and how these firms develop foreign market knowledge from these networks. I also explore how the use of business network relationships for the development of foreign market knowledge relates

to the firm's internationalisation behaviour in terms of the speed of internationalisation.

### **Disposition**

The summary of this thesis begins with an introduction chapter, where the purpose of this thesis is presented. In the chapter that follows, I present background information on the theoretical views that have influenced the field of internationalisation research. In this chapter, I also describe and discuss behavioural internationalisation process theory and the Uppsala model specifically. The following chapter comprises literature reviews of SME research, including a specific section where I review born global research. This chapter ends with a summary of the theoretical framework that is used in this thesis. The research design is then presented, followed by a chapter where I describe the structure of this thesis, including a summary of the six articles included in this thesis. The summary of this thesis ends with a discussion about the findings and contributions made in the six articles. Directions for future research and implications for management are also provided.

### **Definitions and delimitations**

There is no single standard definition of an SME because various criteria can be used (OECD, 2002). The Organisation for Economic Co-operation and Development (OECD) describes SMEs in general as nonsubsidiary, independent firms that employ fewer than a given number of people. The number of employees that determines an SME varies amongst countries. The upper limit used most frequently in OECD countries is 250 employees, although the United States uses 500 employees as the upper limit. Small firms are those with fewer than 50 employees. The OECD points out that the number of employees does not need to be the sole defining criterion for SMEs; financial assets can also be used. Nutek, the Swedish Agency for Economic and Regional Growth, defines SMEs as firms that have a maximum number of 250 employees, a yearly turnover of no more than 40 million euros and a balance sheet not exceeding 27 million euros. A final criterion for Nutek is that an SME must not be more than one quarter owned by companies that do not meet the first two criteria (Nutek, 2007). In this thesis, I define SMEs solely by the number of employees. An SME is defined here as a firm with a maximum number of 250 employees. Likewise, small firms are defined as those with fewer than 50 employees. Medium-sized firms have between 50 and 250 employees.

As mentioned previously, I describe born globals as one type of internationalising SME. This description is in line with previous born global research, which has confirmed that most born globals are SMEs. Knight et al. (2004) conclude that 'Given their young age and relatively limited resource base, most born globals are small and medium enterprises (SMEs)' (p. 649). It is important to note that those born globals that not are SMEs are not studied in this thesis. Influenced by other scholars (Knight and Cavusgil, 1996; Oviatt and McDougall, 1994; Rennie, 1993), I define a born global as a firm that, from inception, discovers and exploits opportunities in multiple countries. Knight et al. (2004) consider the term born global to be a descriptive term, in that most businesses are not literally international from inception. The distinguishing feature of these firms is that their origins are international, as demonstrated by their management's global focus and the related commitment of resources to international activities. Scholars have, therefore, argued that the term born global is used to highlight the fact that managers at such firms tend to perceive the boundaries of their markets and competition as coextensive with the world, at or near founding (Knight and Cavusgil, 1996; Knight et al., 2004). Oviatt and McDougall (1997) have discussed the operationalisation of their term *international new ventures*. They argue that to capture the international dimension of these firms and thus operationalise the term 'international', the existence of a significant percentage of sales coming from foreign countries is the key defining dimension. Moreover, to operationalise a firm that is international from inception, Oviatt and McDougall (1997) suggest that a firm should make observable foreign commitments (e.g., sales efforts, investments) within a conventionally accepted short period of time after formation.

Oviatt and McDougall (1997) acknowledge that the term 'international' is a multidimensional concept, potentially including measures such as the amount of sales revenue derived from foreign countries, which and how many countries are involved and attitudes of managers. The discussion above about how to operationalise the concept of born globals relates to the ongoing discussion amongst international business scholars regarding how to measure terms such as internationalisation or globalisation (e.g., Aharoni, 1971; Asmussen et al., 2007; Sullivan, 1994). In line with the common operationalisations used in born global studies (e.g., Moen and Servais, 2002; Oviatt and McDougall, 1997), this thesis operationalises born globals 'as firms less than 20 years old that internationalised on average within three years of founding and generate at least 25 percent of total sales from abroad' (Knight et al., 2004, p. 649).

In this thesis, the term *key individuals* refers to those founders and managers in the firm who have been responsible for managing the firm's internationalisation. This includes being involved in planning, managing and executing the foreign market activities of some or all of the firms' internationalisation phases. The term key individuals thus includes those individuals who are part of the founding team, as well as those individuals who start working in the firm after it is founded.

This thesis focuses on one part of the internationalisation process: sales outside the home market. This implies that the focus is not on the supply side of an internationalising firm.

In this thesis, the term *foreign market knowledge* refers to both market-specific knowledge and more general internationalisation knowledge. I, therefore, define foreign market knowledge as a firm's experiential knowledge about foreign counterparts (customers, customers' customers, suppliers, distributors, competitors) and a general experience of how to do business in foreign markets. Studies that have focused on the internationalisation of SMEs have shown that foreign market knowledge is positively related to firms' international performance (Yli-Renko et al., 2002). Article 3 presented in this thesis gives indications of such a relationship, but the investigation of the relationship between foreign market knowledge and financial performance has not been a part of the purpose of this thesis.

The qualitative study conducted in this thesis includes 14 small and medium-sized biotech enterprises. The 14 biotech SMEs are concentrated in the large biotech cluster in Uppsala, Sweden. The scope of this qualitative study is, therefore, restricted to country and industry, which limits the ability to generalise the findings made in this study to other industries and countries.

The findings made in the qualitative case studies in this thesis have contributed to the development of a quantitative survey study. However, the results of the qualitative case studies have not been tested in the quantitative survey study. Thus, the findings of the qualitative study have a limited generalisability.

## **THEORETICAL BACKGROUND**

Different theoretical views have dominated research on the internationalisation of firms. Two views that have had a significant influence on the field are transaction cost theory and the eclectic paradigm of international production. Both frameworks can be considered economic theories that explain the multinational enterprise (MNE) and its existence; thus, they can be distinguished from theories of internationalisation that are classified as more

behaviour oriented. Behavioural internationalisation process theory was developed in the early 1970s and came to challenge the assumptions and ideas presented in transaction cost theory and the eclectic paradigm. In the following section, I comment on these theories and how they relate to this thesis regarding SME knowledge development in the internationalisation process. As behavioural internationalisation process theory departs from Penrose's (1959) ideas, elements of the resource-based view appear embedded in this theory. Knowledge-based theory has also had an influence on the development of behavioural internationalisation process theory. The resource-based and knowledge-based theories will, however, not be described within a specific section of this theoretical chapter but rather will be incorporated in the description of behavioural internationalisation process theory.

### **Theories of international business**

Transaction cost theory, which is grounded in neoclassical theoretical assumptions about conditions for stable equilibrium, emphasises cost-related factors as explanations for internationalisation. It focuses on the transaction, rather than the firm, as the unit of analysis. The main argument is that economic organisations should economise on the costs of business transactions over time (Teece, 1986). Firms can organise their activities through hierarchy, markets or contracts, and each mode differs in the methods it uses to organise those activities (Hennart, 1989). As a consequence, the nature of the transactions and the type of governance structure needed will determine their relative efficiency properties (Hennart, 1989; Teece, 1986). A multinational company is, from a transaction cost perspective, seen as an efficient institution that reduces the costs of organising economic interdependence between countries (Hennart, 1989).

As summarised by Hohenthal (2001), the basic question asked in the majority of transaction cost research studies is which entry mode is most efficient in what situation. Brouthers and Hennart (2007) also acknowledged in their review of international entry mode literature that several scholars during the late 1980s and early 1990s started using transaction cost theory to examine both theoretically and empirically the mode choice decision. In their review of the literature, Brouthers and Hennart (2007) found that almost half of the studies reviewed had used transaction cost theory in examining the international entry mode.

The eclectic approach of international production was developed to offer a holistic framework for identifying and evaluating the significance of the factors that influence both a firm's initial foreign production and the growth of

such production (Dunning, 1980). The eclectic approach states that the extent, form and pattern of international production are determined by the configuration of three sets of advantages, as perceived by the firm (Dunning, 1988). These are ownership-specific advantages, internalisation advantages and location advantages. The first determinant is the extent to which a firm possesses certain advantages specific to the nature and/or nationality of its ownership (i.e., ownership-specific advantages). These advantages can be in the form of natural resources, as well as advantages related to certain technology and organisational skills that a firm has developed (Dunning, 1980). The second determinant is whether a firm that possesses ownership-specific advantages wants to sell or lease those assets to other firms or to internalise them (i.e., internalisation advantages). The existence of transactional market failures, such as those arising from risk and uncertainty, is one reason for a firm to internalise operations rather than sell or lease ownership-specific advantages. Therefore, the greater the perceived costs of transactional market failure, the more likely multinational enterprises are to exploit their competitive advantages through international production rather than contractual agreements with foreign firms (Dunning, 1988). The third determinant concerns where production should be located. Location advantages state how profitable it is to exploit these assets in combination with the indigenous resources of foreign countries rather than those of the home country. Examples of location advantages include low material and labour costs or government policies that enhance local production. The identification and value of the ownership, location and internalisation (OLI) parameters influence individual firms in any production decision. Therefore, the more ownership-specific advantages an enterprise possesses, the greater the inducement to internalise them and the greater the attraction of a foreign production base (Dunning, 1980).

Both transaction cost theory and the eclectic paradigm are static approaches. Thus, they suffer from the deficiency of having a limited ability to analyse the dynamics involved in international business and the process of internationalisation. These frameworks, therefore, provide a limited understanding of the dynamics of entry mode selection and channel selection. The review by Brouthers and Hennart (2007) acknowledged that most studies of mode choice have examined the initial mode choice but ignored what happens after entry, and when and why firms change modes. Based on the arguments presented above, transaction cost theory and the eclectic approach can provide a limited understanding of the internationalisation process of SMEs. These theories will therefore not be included in the theoretical

framework of this thesis. The development of behavioural internationalisation process theory has challenged the previous two theories by paying considerable attention to changes in firms' internationalisation. Behavioural internationalisation process theory was, however, not the first to develop the view of firms' internationalisation as a process. In 1966, Vernon explained firms' engagement in international trade and investments as a cycle of product development. The product life cycle theory presented a process view of firms' international investments, which were seen as a final step in a process that began with the involvement in export trade (Gruber et al., 1967).

### **Behavioural internationalisation process theory**

The development of internationalisation process models during the 1970s attracted substantial interest amongst scholars. These models were based on the assumption that a firm's decision-making process is distinguished by bounded rationality because management cannot obtain all the information about a market. Because a firm's actions are constrained by the limited ability to process information (Cyert and March, 1963), the firm makes incremental adjustments to changing conditions within the firm and the environment (Aharoni, 1966). Internationalisation process models were also based on the ideas presented by Penrose (1959), who suggested that the growth of a firm depends on the managers' knowledge of resources and the potential for using resources in different ways.

Behavioural internationalisation process models can be divided into two categories: the Uppsala model (Johanson and Vahlne, 1977) and those models often referred to as the *innovation-related internationalisation models* (Bilkey and Tesar, 1977; Cavusgil, 1980, 1984; Reid, 1981). The innovation-related models consider the decision to internationalise as an innovation for a firm and focus on the learning sequence connected with adopting an innovation (Andersen, 1993). Those models, moreover, describe the internationalisation process as a step-by-step development, with each step representing more experience and involvement than the previous steps. The innovation-related models differ from the Uppsala model in some aspects, some of which are of particular interest in this thesis. First, the innovation-related models have emphasised and focused on the internationalisation process of small firms to a greater extent than has the Uppsala model. For example, Bilkey and Tesar (1977) analysed the meaningfulness of a stage model in examining the export behaviour of small and medium-sized firms in particular. Moreover, Reid (1981) pointed out the need to distinguish between the foreign entry expansion processes of small and large firms and suggested that export behaviour in a

small firm is more likely to be affected by individual decision makers. Likewise, Cavusgil (1984) emphasised the importance of relating the characteristics of a decision maker to a firm's export activity. The innovation-related internationalisation process theories have, therefore, paid more attention to the individual in understanding firms' internationalisation process. In analysing the differences between innovation-related models and the Uppsala model, Andersen (1993) noted that whereas the innovation-related models have been applied to small firms in particular, the Uppsala model is not restricted to one size of firm. The Uppsala model can, therefore, be seen as less bounded in space than the innovation models.

Another difference between the two models concerns what phase of the internationalisation process the models study. Andersen (1993) points out that the innovation-related models are preferably applied from the time the idea of exporting is initiated to the time the international activities are seen as an ordinary and accepted part of a firm's activities. By contrast, the theoretical arguments in the Uppsala model are seen as unbounded in time. However, a weakness of the Uppsala model related to the time aspect of internationalisation is that it lacks explanations of how or why internationalisation starts (Andersen, 1993). The model has not elaborated on the initial conditions of internationalisation.

A final difference between the models that is emphasised in this thesis concerns the theoretical discussion of knowledge development in the internationalisation process. Both models identify experiential knowledge as an important variable in internationalisation. Like the Uppsala model, the innovation-related models identify each step in the internationalisation process as representing more experiential knowledge. The Uppsala model, however, has developed its discussion of the dynamics of knowledge in the internationalisation process by describing firms' knowledge development during this process in more detail.

The Uppsala model is used in this thesis as the theoretical platform for studying firms' knowledge development. In comparison to the innovation-related internationalisation models, this model can provide a more indepth discussion of knowledge development in the internationalisation process, thus making it more suitable for this thesis. The innovation-related internationalisation models, however, contribute important insights into this thesis by emphasising the role of the individual decision maker.

*The development of the Uppsala model: A view of knowledge development in the internationalisation process*

The development of the Uppsala model goes back to the 1960s and 1970s when Swedish scholars conducted a number of empirical studies of Swedish firms' foreign operations. Their observations showed that such firms often developed foreign operations in small steps rather than by making large foreign production investments at single points in time (see Hörnell et al., 1973). Based on empirical observations of four Swedish multinational firms, Johanson and Wiedersheim-Paul (1975) presented the 'establishment chain model', which demonstrated an incremental sequence of foreign market entry modes used by firms during their internationalisation. A four-stage process was illustrated, in which firms start with occasional export orders in a foreign market, continue to make regular exports via independent representatives, establish local sales subsidiaries and, finally, establish local manufacturing. Each step in this model represents an increase in the resources committed to foreign operations; thus, the model demonstrates an incremental increase in resource commitments made by firms in their internationalisation process.

An important concept in the establishment chain model is psychic distance, which was developed to demonstrate those factors that impede or prevent the flow of information between the firm and the market (Hörnell et al., 1973). Examples of such factors are differences in language, culture, political systems, level of education and level of industrial development. A large psychic distance to a foreign market implies that an exporting company has little or no knowledge about that market. It was found that firms start to establish subsidiaries in markets with a small psychic distance and continue in markets with a larger psychic distance (Hörnell et al., 1973). This finding indicated that a firm's knowledge of a foreign market is important when entering that market.

The empirical findings about Swedish firms' development of international operations contributed to the development of a theoretical model of the internationalisation process of firms, known as the Uppsala internationalisation process model (Johanson and Vahlne, 1977). The model regards market knowledge as both input and output. A firm's knowledge of foreign markets guides it towards increased resource commitments in a specific foreign market. As a firm increases its commitment in a foreign market, it develops more knowledge, which then guides the firm towards new resource commitments. The internationalisation process of firms is thus described as an incremental interplay between the development of market knowledge and the

commitment of resources in foreign markets. Moreover, the knowledge development process embedded in firms' internationalisation is cumulative and path dependent because knowledge developed in the past influences the firm's future acquisition of knowledge.

The concept of market commitment was assumed to be composed of two factors, namely, the amount of resources committed and the degree of commitment (Johanson and Vahlne, 1977). The amount of resources committed referred to the size of the investments in the market. The degree of commitment was described as the difficulty of finding an alternative use for the resources and transferring them to it. Therefore, the more specialised the resources are to a specific market, the greater the degree of commitment. The concept of foreign market knowledge was, more specifically, delineated using Penrose's (1959) classification of knowledge. Penrose, who distinguished between knowledge acquired from experience and objective knowledge, regarded knowledge based on personal experience as the most critical in firms' growth. Johanson and Vahlne (1977) developed Penrose's ideas and distinguished between experiential and objective knowledge of foreign market operations. A firm, therefore, acquires experiential knowledge in its current activities in foreign markets. Objective knowledge can be acquired from standardised methods such as market surveys.

In the Uppsala model, experiential knowledge of foreign market operations is regarded as the most critical resource for a firm in its internationalisation. It is critical because it enables a firm to perceive concrete opportunities in foreign markets and reduces the uncertainty involved in a firm's internationalisation. A firm's acquisition of foreign market knowledge, therefore, enables it to perceive opportunities to begin operating in a specific foreign market, to begin selling its product or service to a customer company in that foreign market or to initiate cooperation with a partner abroad. By reducing a firm's uncertainty about operations in foreign markets, the firm's foreign market knowledge guides it towards the decision to commit resources in foreign markets and, thereby, act on the opportunities that have been identified. Objective knowledge, by contrast, does not enable a firm to perceive concrete opportunities abroad and does not reduce a firm's uncertainty in going abroad. Objective knowledge, therefore, does not help a firm increase its resource commitments and involvement abroad. The Uppsala model, therefore, regards objective knowledge as less useful for a firm in its internationalisation process.

### *Studies of firms' pre-export activities*

In parallel to the development of the Uppsala model, Wiedersheim-Paul et al. (1978) studied the pre-export behaviour of firms and elaborated on how firms start to internationalise. Their work was similar to the Uppsala model, based on behavioural theory of the firm (Cyert and March, 1963), but their studies, in contrast to the Uppsala model, elaborated on how the internationalisation process actually gets started. The authors emphasised that the past history and experience of the decision maker may be more important than the background characteristics of the firm in terms of influencing the firm's pre-export activities. An individual with a high degree of international orientation will have a higher probability of being exposed to factors that cause a firm to consider exporting as a possible strategy. Moreover, the decision maker's perception of the uncertainty associated with moving into exporting will influence a firm's pre-export behaviour. Wiedersheim-Paul et al. (1978) also emphasised the local environment of firms and the expansion process within domestic markets that a firm undergoes before exports begin. The location of the firm in the domestic market has an important influence on the information flows to which the firm is exposed.

In a later study, Welch and Wiedersheim-Paul (1980) continued to emphasise the importance of a firm's initial export stage because it represents a key establishment phase in the process of internationalisation. The authors also emphasised that this is a phase in the internationalisation process that has been neglected. The study showed that failed exporters began exporting more rapidly, on average, than did continuing exporters (i.e., they had a shorter time period from initial domestic sales to initial export sales). The authors argued that the activities surrounding initial sales form the beginnings of the experiential knowledge that is so essential to continued internationalisation. If the export results are less profitable than expected, and the problems are greater than anticipated, the risk and uncertainty as perceived by the decision maker are bound to be higher. The authors concluded that the behavioural response of the firm during the early exporting phase depends on the decision maker's perception of the type of feedback generated by the early exporting experiences, which in turn is influenced by the associated impact of risk and uncertainty and is related to the degree of commitment developed during pre-export preparation.

The two studies reviewed above provide interesting findings of a phase in the internationalisation process that not is included in the Uppsala model but has been shown to be of critical importance in understanding the internationalisation process of SMEs. In this thesis, this phase is referred to as

the initial internationalisation phase. By highlighting key elements of this internationalisation phase and how the conditions in this phase relate to a firm's continued internationalisation, these studies contribute useful insights to this thesis. As for example, these studies suggest that the past history and experience of the decision maker is important aspects in this internationalisation phase.

*The business network approach and behavioural internationalisation process theory*

The dyadic business relationship between two firms evolves from interaction between the two parties doing business with each other (Håkansson, 1982; Johanson and Mattsson, 1987). This interaction has been shown to be characterised by business, as well as social and information exchange and the parties making idiosyncratic adaptations of products and processes. The development of business relationships takes time and often involves elements such as mutual dependence, commitment, trust and resource exchange (Håkansson, 1982; Johanson and Mattsson, 1987; Mattsson and Johanson, 2006).

While some research in industrial marketing has focused on the dyadic interaction within supplier-customer relationships, other research has been more concerned with the nature of the market in which the dyadic interaction processes take place (Mattsson and Johanson, 2006). From a network view, markets are networks and can thus be viewed as a system incorporating interactive relationships between firms. Firms develop and maintain business relationships with various actors, such as suppliers, customers, customers' customers, distributors, competitors and governments. The various business relationships in which a firm is engaged make it embedded in its business network (Achrol and Kotler, 1999; Anderson et al., 1994). A business network has been defined as 'a set of two or more connected business relationships, in which each exchange relation is between business firms that are conceptualized as collective actors' (Anderson et al., 1994, p. 2). This definition stems from social exchange theory and its perspective on dyadic relations and social exchange networks (e.g., Cook and Emerson, 1978; Emerson, 1981). Firms in a business network can, moreover, be connected both directly and indirectly. A buying firm is directly connected to its customers, competitors and supplementary suppliers. A supplying company is also directly connected to other customers and other supplying firms. When the two firms in a business relationship cooperate, they bring their connected relationships to the focal relationship and— via each other's relationships with suppliers, customers and

competitors—develop a number of indirect business relationships (Anderson et al., 1994). Achrol and Kotler (1999) describe networks as unique operating environments distinguished by reciprocity and interdependence of relationships. Moreover, through its activities in a business network, a firm develops relationships that secure its access to important resources and the sale of its products and services (Achrol and Kotler, 1999; Johanson and Mattsson, 1987; 1988). Achrol and Kotler (1999) point out that networks can offer superior information processing, knowledge creation and adaptive properties to conventional firms, and as a consequence, more marketing activities will be characterised by the management of interorganisational relations. Powell et al. (1996) demonstrated similar findings in their study of innovations in the biotechnology industry. Their study highlighted that when the knowledge base of an industry is both complex and expanding and the sources of expertise are widely dispersed, the innovation will be found in interorganisational networks of learning, rather than individual firms. A network serves as a locus of innovation because it provides timely access to knowledge and resources that are otherwise unavailable. The study by Powell et al. (1996), therefore, demonstrated that much of the relevant knowledge is neither located inside an organisation nor readily available for purchase but is instead found within a firm's network of relationships with other firms.

Research on international business and theory about the internationalisation process has demonstrated and highlighted that an enhanced understanding of firms' internationalisation process can be generated by integrating behavioural internationalisation process theory with business network theory (Blankenburg Holm et al., 1996; Chen and Chen, 1998; Eriksson et al., 1998; Eriksson and Chetty, 2003; Lindstrand, 2003a; Sharma and Johanson, 1987). Sharma and Johanson (1987) stated that if firms enjoy relationships with other firms (such as equipment suppliers, customers, complementary consultants and banks) that operate in international networks, the relationships may become bridges to foreign markets. Knowledge about foreign market opportunities may, furthermore, be channelled through the network, or firms in the network may pull the firm abroad. In a case study of an ABB division in the Czech Republic, Lindstrand (2003b) broadens the perspective on the development of experiential knowledge in the internationalisation process by including the firm's network of business relationships. The case study demonstrated that the ABB division used not only its customer relationships but also the relationships with foreign suppliers and local sub-suppliers in its experiential knowledge development. The findings of the study, therefore, suggested that a firm undergoing international expansion

uses not only knowledge generated within the dyad of supplier and customer, but also knowledge from a variety of embedded network relationships. The findings on internationalising firms' knowledge development, therefore, support the findings made by Powell et al. (1996) and Achrol and Kotler (2000) by providing evidence that experiential knowledge development of internationalising firms takes place in the interactions within a business network.

When business network theory is integrated with behavioural internationalisation process theory, firms' internationalisation and international business activities appear to occur in a network of business relationships (Blankenburg-Holm et al., 1996; Blomstermo et al., 2004a; Johanson and Vahlne, 2003). A firm's internationalisation means that the firm develops business network relationships in other countries. Foreign markets are, therefore, viewed as a system of business relationships, and foreign market knowledge is based on experience gained from current business interactions. Foreign market commitment is a matter of committing resources to specific business relationships in foreign markets (Chetty and Eriksson, 2002; Johanson and Vahlne, 2003). Knowledge development, therefore, involves those business network relationships activities that are associated with the execution of current operations (Eriksson et al., 1998; Lindbergh, 2004; Lindstrand, 2003a).

### **The concept of knowledge in behavioural internationalisation process theory**

The point of departure of behavioural internationalisation process theory when considering experiential knowledge as the critical resource in firms' internationalisation is Penrose's (1959) theory of the growth of the firm. She distinguishes between knowledge acquired from experience and objective knowledge, describing objective knowledge as that which 'can be formally taught, can be learned from other people or from the written word, and can, if necessary, be formally expressed and transmitted to others' (Penrose, 1959, p. 53). Knowledge acquired from experience is dependent on an individual's own activities. Whereas objective knowledge can be transmitted to others, experience cannot. Penrose argued that 'Experience itself can never be transmitted; it produces a change—frequently a subtle change—in individuals and cannot be separated from them' (1959, p. 53).

To provide a deeper understanding of the concept of experiential knowledge, a discussion of related knowledge classifications is useful. A common knowledge classification, which relates to Penrose's view, is the

distinction between tacit and explicit knowledge. The classification was coined by Polanyi (1969) but was later developed by Nonaka (1991, 1994). Tacit knowledge is context specific and dependent on the individuals who have acquired the knowledge. Individuals, moreover, acquire tacit knowledge in the activities in which they are involved. The qualities of tacit knowledge imply that this knowledge, similar to the Penrose (1959) view of experience, is hard to formalise and difficult to communicate to others. Unlike tacit knowledge, explicit knowledge has a formal and systematic quality. It can be acquired in computer programmes and product specifications and is thus, like objective knowledge, easy to formalise and communicate.

The classification of tacit and explicit knowledge has paved the way for other classifications of organisational knowledge. One is the distinction between information and know-how (Kogut and Zander, 1992; Zander and Kogut, 1995). By 'information', Kogut and Zander (1992) mean 'knowledge which can be transmitted without loss of integrity once the syntactical rules required for deciphering it are known' (p. 386). Information, thus, includes facts, axiomatic propositions and symbols. Knowledge as information, furthermore, implies knowing what something means. Know-how, by contrast, implies knowing how to do something (Kogut and Zander, 1992). Zander and Kogut (1995) contributed to the fields of organisation science and international business by considering and measuring a firm's knowledge along five dimensions: codifiability, teachability, complexity, system dependence and product observability. These five dimensions of a firm's knowledge measure the ability by which manufacturing capabilities are transferred and imitated (Zander and Kogut, 1995).

The different knowledge classifications discussed above can together explain the difference between knowledge and information, as required for this thesis. What is referred to as knowledge in this thesis has been acquired through personal experience. This knowledge is difficult to communicate and hard to formalise. Throughout this thesis, I will use the terms *experiential knowledge* and *knowledge* interchangeably. Information is defined as facts that can be acquired from various sources, including product specifications, computer programmes and market surveys. Information can, therefore, be formally expressed and transmitted to others. I will use the terms *information* and *objective knowledge* interchangeably throughout this thesis.

The different knowledge classifications discussed above can, more specifically, provide a useful point of departure for understanding how individual knowledge is distinguished from organisational knowledge in the context of an internationalising firm. The concepts of tacit knowledge and

experiential knowledge both have a personal quality (Nonaka, 1991, 1994; Penrose, 1959). It is the individuals in a firm who are engaged in a firm's activities and thus acquire experiential knowledge. This also implies that the experiential knowledge acquired from a firm's operations is stored in these individuals' memories. Individuals are, however, not the only repositories of experiential knowledge. Knowledge based on individual experience can also be stored in a firm's procedures, norms and rules (Cyert and March, 1963; March, 1991) and routines (Cohen and Bacdayan, 1994). Routines are important because they allow a firm to transfer experience to new situations (Cohen and Bacdayan, 1994). Routines thus enable a firm to use stored knowledge in future decision-making processes. In this way, the routines of a firm guide its behaviour (Cyert and March, 1963). Routines are independent of the individual actors who execute them and are capable of surviving considerable turnover in individual actors (Levitt and March, 1988).

As I have already pointed out in this thesis, behavioural internationalisation process theory and the Uppsala model do not deal explicitly with the individual decision maker. The firm is instead used as the unit of analysis, and this theory, thereby, implicitly assumes that the experiences acquired by individuals in a firm engaged in foreign markets have been stored in a firm's procedures and routines. Based on behavioural internationalisation process theory, I refer to foreign market knowledge as experiential knowledge, which is knowledge developed from experience in foreign market operations. Moreover, I distinguish between individual-level knowledge and firm-level knowledge and describe foreign market knowledge as firm-level knowledge. I, therefore, view foreign market knowledge to comprise those experiences acquired by individuals in a firm engaged in foreign markets, which are then stored in a firm's procedures and routines.

#### *The concept of knowledge development*

Organisational learning has been identified as an important element in behavioural internationalisation process theory (Barkema et al., 1996; Eriksson et al., 1997; Petersen et al., 2008). According to this theory, a firm's foreign market operations are both the source and the result of acquired experiential knowledge because firms continually apply lessons learned from experience to future activities (Blomstermo et al., 2004a). The nature of experiential knowledge development implies that it can be regarded as similar to organisational learning, which is 'the process within the organization by which knowledge about action-outcome relationships and the effect of the environment on these relationships is developed' (Duncan and Weiss, 1979, p.

84). Knowledge development, therefore, implies an enhanced ability to connect actions to outcomes. Based on this perspective, the internationalising firm can develop knowledge when it responds to changes in its market, identify errors and take action to correct them (Blomstermo et al., 2004a).

Cohen and Levinthal's (1990) concept of absorptive capacity is related to the Uppsala model's view of knowledge development. Absorptive capacity is defined as the ability to 'recognize the value of new, external information, assimilate it, and apply it to commercial ends' (Cohen and Levinthal, 1990, p. 128). Absorptive capacity and organisational learning have a recursive relationship (Lane et al., 2006). Increased learning in a particular area enhances the organisation's knowledge base in that area, which further increases its absorptive capacity and, thus, facilitates more learning in that domain (Autio et al., 2000; Barkema and Vermeulen, 1998). The concept of absorptive capacity thus emphasises that an organisation needs prior related knowledge to assimilate and use new knowledge. Absorptive capacity is, therefore, similar to experiential learning because it is cumulative and path dependent. This concept also implies that learning is more difficult in novel domains and, more generally, that an individual's knowledge will change only incrementally.

Based on the discussion above, I will use the terms *learning* and *knowledge development* interchangeably. Whereas behavioural internationalisation process theory builds its theoretical arguments around the development of experiential knowledge based on a firm's foreign market operations, research within organisational learning has emphasised alternative ways of acquiring knowledge. One such way is to obtain new knowledge by acquiring companies and employing people. Huber (1991) used the term *grafting* to denote this type of learning and described it as occurring when a firm grafts on new members who possess knowledge not previously available within the firm. The most obvious type of learning through grafting occurs when one company acquires another to obtain access to its knowledge or to recruit managers with knowledge that the acquiring company lacks (Segelod, 2001). Huber (1991) noted that few studies had focused on learning through grafting. Building on this statement, Segelod (2001) found that even though numerous studies have been published on this type of learning, most of the studies have been concerned with learning through a specific mode of grafting, such as acquisitions or joint ventures. Within the field of internationalisation process theory, scholars have identified grafting as an important means of acquiring the foreign market knowledge necessary for an internationalising firm (Barkema and Vermeulen, 1998; Forsgren, 2002). Grafting as a method to acquire knowledge about foreign markets implies that the internationalising

firm can acquire other organisations or recruit people with the necessary knowledge and, thereby, obtain access to that knowledge faster than would be possible through the firm's own experiences. In this thesis, I consider learning through grafting as an alternative way of acquiring experiential knowledge for a firm. I specifically focus on one mode of grafting, which is to recruit managers with knowledge that the firm lacks.

Huber (1991) elaborates on four constructs that reflect organisational processes linked to organisational learning: knowledge acquisition, information distribution, information interpretation and organisational memory. As described above, knowledge acquisition concerns processes by which knowledge is obtained. Information distribution is the process by which information from different sources is shared, and information interpretation is the process by which distributed information is given one or more commonly understood interpretations. Finally, organisational memory concerns the means by which knowledge is stored for future use. Huber's (1991) discussion on organisational learning and the discussion of different knowledge classifications above suggest that knowledge development is driven by the activities of individuals in a firm. The view on knowledge development as presented in this thesis departs from this understanding. The argument put forward throughout this thesis is that an understanding of how SMEs develop foreign market knowledge in their internationalisation process requires analyses of how individuals' activities and individuals' knowledge influence a firm's activities and its knowledge. Behavioural internationalisation process theory describes a firm's operations in foreign markets as taking place within networks of business relationships. Knowledge development then occurs within the interaction between business network relationships. Studies of SME internationalisation have, in addition to this view, indicated that an important part of the knowledge development within these firms' internationalisation process takes place within personal network relationships. Based on existing behavioural internationalisation process theory (Blomstermo et al., 2004a; Eriksson et al., 1998) and findings from SME literature, I describe knowledge development to be a matter of both business relationship activities and personal relationship activities associated with the execution of a firm's current operations in foreign markets. With such a view, the knowledge development process departs from those key individuals in a firm who acquire experiential knowledge in their interactions within personal and business network relationships. If their experiential knowledge later becomes stored in a firm's procedures, norms, rules and routines, this individual-level knowledge can become accessible to the other individuals in the firm (Eriksson et al., 1998).

The firm's foreign market knowledge will then guide key individuals' future interactions and behaviour in foreign markets. In so doing, it also influences what new knowledge those key individuals develop.

The Uppsala model has been criticised for predicting too straightforward a relationship between experiential learning and a firm's behaviour in the internationalisation process (Forsgren, 2002) and for not discussing potential problems associated with experiential learning. Organisation learning theory has emphasised that the connection between learning and performance is far from apparent (Levinthal and March, 1993), suggesting that there are no straightforward relationships between experiential learning and firms' internationalisation behaviour. Levinthal and March (1993) point out the limitations of experiential learning. One such limitation is what is referred to as *superstitious learning*, which occurs when the subjective experience of learning is compelling, but the connections between actions and outcomes are misspecified (Levitt and March, 1998, p. 325). Situations in which superstitious learning occurs are often those in which the subjective evaluations of success are insensitive to the actions taken (Levitt and March, 1998). For example, in an organisation that is successful, routines that are followed are associated with success and are reinforced; other routines are inhibited. The routines that are followed are, however, determined more by early actions than by the current learning situation. In studying the knowledge development of SMEs, I consider potential problems in the process of experiential knowledge development. I, therefore, do not view firms' experiential knowledge development as straightforward, and I specifically pay attention to the risk of superstitious learning.

### **THE INTERNATIONALISATION PROCESS OF SMEs**

In their review of empirical studies of SMEs' internationalisation process published during the 1989-1998 period, Coviello and McAuley (1999) identified 16 studies that were eligible for review. Those studies looked at manufacturing, service and software/technology firms based in Europe, New Zealand, Hong Kong or Pakistan. All 16 of the studies reviewed were published between 1992 and 1998; studies published in the late 1980s were scarce. Coviello and McAuley suggested that the growing interest in SME internationalisation in the early 1990s was related to the work of Johanson and Vahlne (1990), which recognised that the concept of internationalisation is not synonymous with export activity. Their work stimulated research about the internationalisation process of SMEs during the 1990s. Thus, behavioural

internationalisation process theory has substantially influenced the development of research about the internationalisation process of SMEs.

A common starting point in several studies of SME internationalisation process is a consideration of the differences that exist between large enterprises and small and medium-sized enterprises in terms of a firm's ability to internationalise. The conventional view often presented is that SMEs have limited financial and managerial resources compared with large firms, as well as limited network and information resources. Their scarce resources have been viewed as a major challenge for these firms when expanding abroad. In contrast to this commonly held perception, Reuber and Fischer (1997) argued in their study of SME internationalisation behaviour that firm size is not a good predictor of international activity. The authors instead demonstrated that internationally experienced management teams were viewed as a resource that influenced SMEs to engage in behaviours that lead to a greater degree of internationalisation. In light of the arguments and findings presented by Reuber and Fisher (1997), Coviello and McAuley's (1999) review made clear that several SMEs were able to overcome size-related challenges by developing and managing both a business network and a social network. From these networks, SMEs could attain the resources that they lacked. Based on the findings from the reviewed studies, Coviello and McAuley highlighted the complementary nature of behavioural internationalisation process theory and network theory in explaining the internationalisation process of SMEs. The findings of Coviello and McAuley have been supported in studies examining service SMEs (Coviello and Martin, 1999; Moen et al., 2004), manufacturing SMEs (Chetty and Blankenburg Holm, 2000; Chetty and Campbell-Hunt, 2003) and high-tech SMEs (Bell, 1995, 1997; Coviello and Munro, 1995, 1997; Crick and Jones, 2000; Crick and Spence, 2005). Common to all of those studies is the belief that an integration of behavioural internationalisation process theory and network theory can contribute to an enhanced understanding of the internationalisation process of SMEs.

#### **Key individuals' prior experiential knowledge and personal network**

In their study of the internationalisation of high-tech SMEs, Crick and Jones (2000) showed that the experiences of key individuals in the firms had influenced the firms' internationalisation:

Several firms...were started by managers with experience operating in international markets from previous firms in which they were employed. As such, they had developed experience in dealing with the complexities (e.g., paperwork, finance) of international operations, had

an appreciation of the risks and resource implications, and had developed a network of customers and contacts on which they could build after starting their own firms. (pp. 71-72)

The international experiences of these managers contributed to their decision to engage in outward market expansion strategies within a year after their companies were founded. Crick and Jones also found that some high-tech SMEs were started by managers who considered themselves technicians/engineers rather than business/marketing people; these managers were more interested in developing technically superior products than in building up the selling side of their firms. These firms also experienced a slow start in their international operations. In line with the findings presented by Crick and Jones, Lindqvist (1991) concluded in her thesis about the internationalisation of young, technology-based firms that 'Another interesting observation was the role of the previous experience of executives in speeding up internationalization' (p. 215). Lindqvist (1991) also noted that firms that had executives with prior experience were able to make use of existing contacts abroad, which facilitated the search for potential customers or representatives. In their study of six small Nordic companies, Boter and Holmquist (1996) concluded that a company in a sector characterised by high-technology demands will experience a more rapid process of internationalisation wherein the development of various functions does not follow a predictable order. Coviello and Martin (1999) found, similar to the studies of high-tech firms, that those service SMEs that wanted to expand their international commitments more rapidly than could be achieved through incremental activity over time recruited personnel with knowledge of foreign markets and expertise in clients' required areas.

Crick and Jones (2000) also found that the key individuals in high-tech SMEs had often developed personal networks of relationships that were useful in the initial phase of their firms' internationalisation. Several scholars have emphasised that the personal relationships that founders and managers have with friends, family, former colleagues and others are just as important as business network relationships for resource access and internationalisation (Coviello and Munro, 1995; Crick and Jones, 2000). Coviello and Munro (1995) argued that 'foreign market selection and entry initiatives emanate from opportunities created through network contacts.... These contacts may be formal (i.e. business-related) or informal (family, friends, etc.)' (p. 58). Similarly, Ellis (2000) showed that small firms commonly acquire knowledge of foreign market opportunities through existing interpersonal links. The use of

market research or other, more formal search activities was less common. The challenges involved in using these networks for resource access have also been addressed (Crick and Spence, 2005; Jones, 1999). Crick and Spence (2005) showed that in the early phase of a high-tech SME's internationalisation, existing personal networks of owners and managers had sometimes lost their usefulness. As a consequence, these firms had to develop new networks so as to access the necessary resources and to enter new markets. One means to do so was to recruit new managers who possessed new personal networks.

The studies presented above indicate that key individuals' experiential knowledge about foreign market operations relates to an SME's internationalisation behaviour, in terms of a firm's ability to identify opportunities in foreign markets and its speed of internationalisation. The studies also indicate that experiential knowledge has been developed in a pre-firm internationalisation phase. In addition, the personal networks of key individuals are important for a firm's development of foreign market knowledge and relate to an SME's internationalisation behaviour in the initial internationalisation phase.

#### **SMEs' business network of relationships**

A substantial number of scholars have used the business network approach and focused on SME development and utilisation of business network relationships (Agndal and Chetty, 2007; Bell, 1995; Chetty and Blankenburg Holm, 2000; Chetty and Campbell-Hunt, 2003; Coviello and Martin, 1999; Coviello and Munro, 1997; Moen et al., 2004). Coviello and Munro (1997) studied small software firms and demonstrated that they used their networks extensively to expand into foreign markets. The study found that early in the life cycle of a small software firm—when the firm might lack knowledge of foreign markets and its own network of relationships—it may depend on an initial relationship with a larger firm. In the studied firms, this relationship provided the small firms with a mode of entry to psychically close markets. Facilitated by the initial relationship, the small firm could then develop its own network of relationships from which it could acquire useful market knowledge as well as a mode of entry to different markets around the world.

Chetty and Blankenburg Holm (2000) conducted a longitudinal case study of four small and medium-sized manufacturing firms in the electrical industrial machinery and timber processing industries in New Zealand. The authors found that SMEs using network relationships exposed themselves to new opportunities, obtained knowledge and learned from experience. The development of a business network, therefore, enabled these firms to

internationalise. A wide range of business relationships (including relationships with agents, customers, suppliers, distributors and competitors) was important for the internationalising SMEs. In a later study, Chetty and Campbell-Hunt (2003) demonstrated how SMEs' business relationships determined their internationalisation. In their study investigating SMEs in New Zealand, Chetty and Campbell-Hunt showed that the firms formed relationships with their suppliers, customers, distributors, universities, competitors and government in the domestic market. Their domestic-based business relationships helped the firms identify potential international partners. Chetty and Campbell-Hunt emphasised that internationalisation from a relatively small country base like New Zealand is sudden and involves large-scale change. The rapid internationalisation places pressure on resources and existing business networks and creates managerial challenges. The authors argued that the studied SMEs could accelerate their internationalisation process and manage their problems by forming business relationships to gain access to distribution networks, technology and market knowledge.

In their study of how existing relationships influence changes in SMEs' internationalisation strategies, Agndal and Chetty (2007) found that business relationships are more influential in internationalisation strategy changes than social relationships, especially with regard to mode changes in foreign markets. Relationships at the level of the individual can, however, help create closer business relationships, and as firms gain more experience and acquire more knowledge from these relationships, risk and uncertainty about foreign markets are reduced. The authors thus concluded that the firm's experience in forming relationships, its choice of partners and commitment to these partners are important determinants of how these relationships influence the firm's internationalisation strategies.

The studies presented above indicate that an SME that uses its business network relationships can develop knowledge about foreign markets. Business networks also facilitate firms' identification of opportunities in foreign markets. Business network relationships considered important for an SME may involve actors such as domestic customers and partners, as well as foreign customers and partners. Furthermore, the studies suggest that the business network of an SME is important in the firm's initial, as well as continued, internationalisation. Rapid internationalisation, however, creates managerial challenges and places even more pressure on an SME to use its business network for accessing foreign market knowledge in the internationalisation phases.

### **The born global firm: The case of an early and rapidly internationalising SME**

By the end of the 1980s, articles about the rapid internationalisation of SMEs, a discovery that contradicted the traditionally held view, were first being published. In the early 1990s, more and more studies focusing on the speed of internationalisation amongst SMEs started to appear. The increasing number of SMEs that were shown to start operating abroad from their inception, or soon thereafter, were denoted global start-ups, international new ventures or born globals. Those terms are broadly used to refer to the same basic phenomenon—early and rapidly internationalising SMEs—and such firms are often presented as having similar characteristics. They begin exporting one or several products within three years of their establishment and tend to export at least a quarter of their total production (Knight et al., 2004). Born globals are often small firms, with average annual sales usually not exceeding US \$100 million. Sales generated from the domestic market are generally small (Rennie, 1993). The majority of these firms are formed by active entrepreneurs, who are generally internationally experienced and view the world as their firms' marketplace from the beginning (Knight and Cavusgil, 1996; McDougall et al., 1994; Oviatt and McDougall, 1997). Some scholars have argued that born globals tend to emerge as a result of a major breakthrough in some process technology, and these firms are thus found within high-technology industries (Knight and Cavusgil, 1996). Others have suggested that born globals are not confined to a few industries but rather are spread across industries and services (Andersson and Wictor, 2003; Rialp et al., 2005).

#### *The research field of international entrepreneurship*

To explain why a large number of SMEs start operating abroad from their inception or soon thereafter, scholars often point to changing market conditions as an important reason (Knight and Cavusgil, 1996; Oviatt and McDougall, 1997; Rennie, 1993). What scholars do not agree upon is which theoretical perspective is best suited for understanding and explaining born globals and their internationalisation process. Born global studies have directed strong criticism towards behavioural internationalisation process theory, arguing that it is not applicable to small, new ventures that start internationalising early in their existence (Knight and Cavusgil, 1996; McDougall et al., 1994). One argument is that behavioural internationalisation process theory has focused on understanding the internationalisation of large, established multinational companies (McDougall and Oviatt, 2000). Most scholars of born globals thus argue that the formation process of these firms seems to be largely inconsistent

with behavioural internationalisation process models (Knight and Cavusgil, 1996; McDougall et al., 1994; Oviatt and McDougall, 1997). At the same time, some scholars have acknowledged that the underlying knowledge development model within the Uppsala internationalisation process model can still provide a solid theoretical framework for understanding the internationalisation behaviour of born globals (Autio et al., 2000; Yli-Renko et al., 2002), especially as this knowledge development model is integrated with network theories (Rialp et al., 2005; Sharma and Blomstermo, 2003).

The field of research that has primarily focused on SMEs and new ventures is entrepreneurship research. Unlike international business research, entrepreneurship research has directed interest towards the management of SMEs and new venture creation in a domestic context (McDougall and Oviatt, 2000). To better understand the phenomenon involving the increasing number of new ventures that start operating abroad from inception or soon thereafter, scholars have suggested that an integration of international business and entrepreneurship theories is required (Young et al., 2003). By integrating these two theoretical perspectives, research into international entrepreneurship has developed.

#### *The internationalisation process of born globals: A literature review*

Research shows that an SME started by key individuals with experiential knowledge about foreign market operations and useful personal network relationships has an enhanced capacity to identify foreign market opportunities and to speed up the pace of internationalisation during its initial internationalisation phase. Moreover, an SME's business network relationships with foreign, as well as domestic, actors relates to its internationalisation behaviour in both the initial and continued internationalisation phases. Therefore, if these factors are related to an SME's speed of internationalisation, they should also be of importance in studies of born globals.

Although studies of born globals have emphasised that these firms' business network relationships are important for gaining access to resources during their internationalisation (Chetty and Campbell-Hunt, 2004; Madsen and Servais, 1997; Sharma and Blomstermo, 2003), it is the personal network relationships of key individuals that have received substantial attention. Scholars have argued that key individuals' personal network relationships are of great importance in a born global's internationalisation process (Andersson and Wictor, 2003; Rialp et al. 2005). McDougall et al. (1994) demonstrated that born globals tended to be started by entrepreneurs who had developed a

worldwide network of highly successful individuals from earlier activities. These networks were characterised by social relationships, as opposed to business relationships. In addition to providing advice, these personal relationships often helped the newly started firm identify opportunities in foreign markets. Andersson and Wictor (2003) have used entrepreneurship theory, as well as prior born global research, to analyse case studies of Swedish firms. They concluded that the majority of the literature about networks focuses on networking that occurs in more mature firms, as well as on the processes, routines and systems that are present at the company level. Born globals, however, often lack processes, routines and systems because of their newness (Autio et al., 2000; Knight et al., 2004). The findings presented by Andersson and Wictor (2003) suggest that focusing on the personal networks of key individuals should yield an enhanced understanding of born global firms.

Similar to the findings reported in studies of other SMEs, studies of born globals have indicated that the high degree of previous international experience of founders and managers is related to the speed of these firms' internationalisation (Chetty and Campbell-Hunt, 2004; Madsen and Servais, 1997; McDougall et al., 1994; Oviatt and McDougall, 1997). Madsen and Servais (1997) summarised the empirical evidence reported about born globals and interpreted the phenomenon at a deeper theoretical level. Because the founders of these firms have previously acquired experiential knowledge about foreign markets, they argued that the new firms will have greater opportunities to engage in foreign market operations. For firms with already acquired international knowledge, resource commitments in foreign markets become much easier from an early phase of the firm's life cycle.

Even though born globals have been established in a wide range of business fields, a large number of born global studies have concentrated on firms in high-tech industries. The knowledge resources of these born globals (and specifically the extent to which these firms depend on their technological knowledge resources) have been of particular interest (Autio et al., 2000; Yli-Renko et al., 2002). A firm's intensity of technological knowledge resources—that is, the extent to which this knowledge is used in a firm's activities and output—has been shown to be related to the speed of a firm's internationalisation. For a knowledge-intensive firm, technological knowledge is used in activities such as developing new offerings, improving productivity and introducing new methods of production (Bell et al., 2003). Scholars have, moreover, suggested that one reason for the relationship between a firm's knowledge intensity and its speed of internationalisation is that its

technological resources allow the firm to combine those resources rapidly and flexibly with reduced mobile resources in foreign markets (Oviatt and McDougall, 1994). The knowledge intensity of a firm may influence its international growth by having a positive effect on the firm's knowledge development (Autio et al., 2000). Existing born global research has, therefore, suggested that those firms with lower knowledge intensity in products, activities and processes are more likely to experience a relatively slower internationalisation than those firms with higher knowledge intensity. Based on existing research, this thesis defines knowledge intensity as the extent to which a firm depends on the knowledge inherent in its activities and outputs as a source of growth.

To summarise the findings presented above, studies of born globals have paid a great deal of attention to the factors that relate to key individuals in these firms. Key individuals' international experiential knowledge and personal network relationships have been shown to influence the ability of a newly started firm to identify foreign market opportunities and to begin operating abroad shortly after the firm's establishment. In other words, existing studies of born globals suggest that in the initial internationalisation phase, a born global's development of foreign market knowledge is influenced by its key individuals' international experiential knowledge and personal networks. Studies, however, also suggest that the knowledge intensity of a born global influences its ability to start operating in foreign markets soon after its establishment. To conclude, existing born global research provides in-depth findings on the initial internationalisation phase of these firms. Less attention has been paid to these firms' continued internationalisation phase.

### **Social network theory**

The reviews of SME and born global studies have demonstrated that the personal network of relationships that key individuals in these firms have developed is of importance in the firm's initial phase of internationalisation. To develop a deeper understanding about these networks, it is important, for the purpose of this thesis, to understand the difference between the concepts of personal network of relationships and business network of relationships. Based on the work of Hallén (1992), the personal network of an individual is in this thesis distinguished from a firm's business network in two dimensions. First, personal network relationships are related to the individual personally and cannot be expected to be transferable to other individuals (Hallén, 1992). These networks have been developed by the individual founders or managers at various stages of their career and retained over the years. A firm's business

network relationships are created by, and related to, the company of the person possessing the contacts. Business network relationships can also be expected to be transferable to other individuals within the firm. The second dimension concerns the degree of orientation towards the actual business deals—that is, the distinctiveness of the business purpose of the activity (Hallén, 1992). A firm's business network relationships have a business purpose and directly concern business activities. An individual's personal network relationships do not need to have a business purpose or concern business activities.

To enhance the understanding of the personal networks of key individuals, I will use social network theory and the concept of social capital in this thesis. In relation to the concept of personal network, the concept of social capital comprises both an individual's network and those resources that may be mobilised through that network (Adler and Kwon, 2002; Nahapiet and Ghoshal, 1998). In other words, a key individual's social capital can represent the ability of this individual to access resources by virtue of membership in personal networks (Portes, 1998). By using the concept of social capital to analyse how an SME can develop foreign market knowledge from the key individuals' personal networks, this thesis can take the analysis of personal networks one step further.

The social capital concept has been used to analyse the importance of relationships as a resource for social action (Burt, 1992; Coleman, 1988, 1990). The concept initially appeared in community studies as a way to highlight the central importance of networks of strong personal relationships (Adler and Kwon, 2002). Since its introduction, the concept of social capital has been used to analyse a wide range of social phenomena (Adler and Kwon, 2002). As a consequence, many different views exist of what constitutes social capital. Whereas some scholars have focused on the relationships that an actor maintains with other actors, other scholars have focused on the structure of relationships amongst actors within a collective group (Adler and Kwon, 2002). A number of scholars have criticised the unidimensional view and instead have pointed out the advantage of incorporating both views in analysing social capital (Adler and Kwon, 2002; Nahapiet and Ghoshal, 1998). Nahapiet and Ghoshal (1998) have contributed to this multidimensional view of social capital by delineating three dimensions of social capital: relational, structural and cognitive. Views also differ about which unit of analysis should be used. Some scholars focus on the individual benefits of social capital (Burt, 1997); others see it as beneficial for a social unit (Coleman, 1988), and some researchers incorporate both (Inkpen and Tsang, 2005; Nahapiet and Ghoshal, 1998). A related distinction often made when discussing social capital is that of

social capital as a public or private good. This distinction concerns the benefits of social capital and how they are distributed across a social unit. Social capital as a private good means that individuals use their social capital primarily for personal benefits (Kostova and Roth, 2003). Even though others may also benefit from such a private good, their access to the social structure is controlled by those who 'own' the social capital. Social capital becomes a public good when it is available to and could potentially benefit not only those who have created it but also group members at large (Kostova and Roth, 2003). Kostova and Roth (2003) have, in line with Adler and Kwon (2002), used the term public good to represent a collective asset limited to the members of a social entity rather than a pure public good. Viewing social capital as a public good then implies that social capital resides at the level of a collective social entity, such as an organisation. It also implies that all members of such an organisation have access to the social capital.

Building on existing social capital research (Adler and Kwon, 2002; Portes, 1998), social capital is defined here as the network of relationships that a network member has and the resources available, for action and activities, through that network. The concept of social capital is then used to analyse the benefits of an individual's social capital for the larger social unit: the internationalising SME. The focus is on the abilities of individual network members to use their personal relationships to access critical resources for the firm in the internationalisation process. From this perspective, social capital is viewed as a private good because the focus is on the individual actor and the personal relationships of this individual. Even though the social unit (i.e., the internationalising SME) benefits from the individual's social capital, the access to this capital is controlled by the individual who has developed the personal relationships. Moreover, I have adopted a multidimensional view of social capital, and use Nahapiet and Ghoshal's (1998) three dimensions of social capital to analyse the internationalisation process of SMEs.

Burt (1992, 1997) has described how the value of social capital to an individual is contingent on the number of people doing the same work. Drawing on previous network theories, such as Granovetter's (1973) strength of weak ties and Cook and Emerson's (1978) theorising on the power of having exclusive exchange partners, Burt develops his arguments on the network structure of social capital using structural hole theory. That theory defines social capital in terms of the information and control advantages of being the broker in relationships between people otherwise disconnected in the social structure. The structural dimension of social capital, therefore, describes the overall pattern of connections between actors (Coleman, 1988)—that is,

‘who you reach and how you reach them’ (Burt, 1992). Overall, the structural dimension highlights the network structure of firms and which resources can become accessible and available to actors through their personal network structures. The relational dimension of social capital consists of the personal relationships that people develop with one another through a long series of interactions. Amongst the key elements in this dimension are trust, trustworthiness and social interaction (Coleman, 1990). The cognitive dimension of social capital includes shared narratives, values, language and goals between individuals (Nahapiet and Ghoshal, 1998).

Social network theory has focused on social and human capital and how social capital is related to the development of human capital. The concept of human capital refers to those intangible resources embodied in the skills and knowledge that an individual acquires (Coleman, 1988). Human capital is traditionally built up from components such as formal education and experience (Davidsson and Honig, 2003). Whereas human capital is created by changes in individuals that result in knowledge that enables them to act in new ways, social capital is created by changes in the relationships amongst individuals that facilitate action (Coleman, 1988). Based on the work of Coleman, Portes (1998) also describes the differences between human capital and social capital by acknowledging that whereas human capital is inside the head of an individual, social capital is inherent in the structure of their relationships. In this thesis, the concept of human capital is used to analyse the experience and knowledge that key individuals have developed from previous employment and life experiences and how they relate to their behaviour in the firm’s internationalisation process.

### **The Austrian school of entrepreneurship**

The reviews of SME and born global studies demonstrated that the experience and knowledge that key individuals bring to a newly started firm play an important role in their ability to identify initial opportunities for foreign market operations for their firm. For those SMEs and born globals that operate in dynamic markets, windows of opportunities can rapidly open and close, which cause these firms to face unique challenges when discovering and exploiting opportunities abroad. The topic of opportunity discovery and exploitation has also been identified as one requiring further study within this research field (Dimitratos and Jones, 2005; Styles and Seymour, 2006).

The ability of a firm to identify opportunities in foreign markets is central in the Uppsala model’s view of internationalisation. A firm’s foreign market knowledge is assumed to enable a firm to identify opportunities abroad

and then exploit those opportunities. However, to understand how SMEs and born globals discover and exploit opportunities in their internationalisation process, the Uppsala model suffers from a deficiency because it does not elaborate on the influence from key individuals' experiential knowledge. To make up for this deficiency, entrepreneurship research can contribute substantial insights because the topic of opportunity recognition is viewed as a key aspect of the entrepreneurial process (Shane and Venkataraman, 2000). Research within this field has portrayed opportunity recognition from different perspectives (e.g., Alvarez and Barney, 2007; Shane, 2000). One of the more dominant perspectives departs from the Austrian economics view of opportunity discovery with the work of Mises, Hayek and Kirzner.

The work of Mises and Hayek from the 1930s expresses a sharp dissatisfaction with the belief in equilibrium models that rely upon assumptions of perfect knowledge found in neoclassical microeconomics. The assumptions of neoclassical microeconomics were considered unrealistic, and arguments for information asymmetry were instead emphasised. The fact that people differ in the knowledge they possess (Hayek, 1945) influences their respective discoveries of opportunities. Building on the work of Hayek (1945) and Kirzner (1997), Shane (2000) concludes that entrepreneurs discover opportunities related to the information they already possess and that entrepreneurs' prior experience and education are thus elements that influence the process of opportunity discovery.

The entrepreneurial discovery approach presents a new perspective on how entrepreneurs discover opportunities by distinguishing between discovery and search. Kirzner (1997) explains: 'An opportunity for pure profit cannot, by its nature, be the object of systematic search. Systematic search can be undertaken for a piece of missing information, but only because the searcher is aware of the nature of what he does not know, and is aware with greater or lesser certainty of the way to find out the missing information' (p. 71). Decision makers cannot know of what they are ignorant, and discovery is, therefore, accompanied by an element of surprise. The role of the entrepreneur is, therefore, to see economic opportunities that have been overlooked by others. To do this, entrepreneurs must be alert to possible opportunities (Kirzner, 1997), which implies that entrepreneurs must have an attitude of receptiveness to available (but hitherto overlooked) opportunities.

In this thesis, I draw on the Austrian school to provide useful insights into SMEs' and born globals' discovery and exploitation of foreign market opportunities. I find that the Austrian school's perspective of opportunity discovery is particularly useful in this thesis because the Uppsala model and

the Austrian school have similar points of departure on several key elements in their respective processes. First, the two schools are similar in their emphasis on the role of knowledge and learning in dynamic markets and the assumption that knowledge is a key determinant in the discovery of opportunities. Second, both theories include notions of path dependence in their analysis of how opportunities are identified and discovered. Thus, they emphasise that prior knowledge influences the discovery of opportunities. Third, both theoretical schools consider the discovery of opportunity to be a reactive process because a discovery cannot result from an active search. On some issues, important differences between the two theories can be found. I find that these differences highlight important elements on which the theories complement each other in their views on opportunity discovery. First, whereas the Uppsala model analyses a firm's knowledge and uses the firm as the unit of analysis, the Austrian school emphasises the entrepreneur and enables analysis of the behaviour of the entrepreneur in discovering opportunities and the influence of the knowledge of this entrepreneur. This implies that the Austrian school can complement the Uppsala model by enabling analysis of how the experiential knowledge of key individuals relates to the discovery of opportunities for a born global firm. Second, the two theories define opportunities somewhat differently. Using Casson (1982) as a theoretical reference, Shane and Venkataraman (2000) described entrepreneurial opportunities as situations in which new goods, services, raw materials and organising methods can be introduced and sold at a profit. Kirzner (1997) perceived profit opportunities as events that are discovered and grasped by routine-resisting entrepreneurial market participants. The Uppsala model focuses on opportunities directly related to specific foreign markets. When firms act in these markets, the opportunities they discover lead to the acquisition of new knowledge about how to conduct business in the markets, which in turn enhances their internationalisation process. This thesis adopts the international perspective on opportunity discovery, as shown in the Uppsala model's view, and focuses on foreign market opportunities. Foreign market opportunities are those opportunities that are related to a firm's new business operations in foreign markets. The differences between the two theoretical perspectives can also be interpreted so that they enable analysis of different phases of the internationalisation. The Uppsala model focuses on firm-level knowledge and the internationalisation process once it has started. By contrast, the Austrian school focuses on an entrepreneur's knowledge and how an entrepreneur's prior experience and education relate to the discovery of opportunities. In this way, the Austrian school can enable analysis of how experiential knowledge

developed by key individuals in a pre-firm internationalisation phase relates to opportunity discovery in a firm's initial internationalisation phase. The Uppsala model can then be interpreted so as to focus on how a firm's knowledge relates to opportunity discovery in its continued internationalisation phase.

Based on a discussion of the similarities and differences found in the Uppsala model and the Austrian school regarding opportunity discovery, I find that the two theories together provide a comprehensive framework for analysing the ability of SMEs and born globals to discover foreign market opportunities in their internationalisation process.

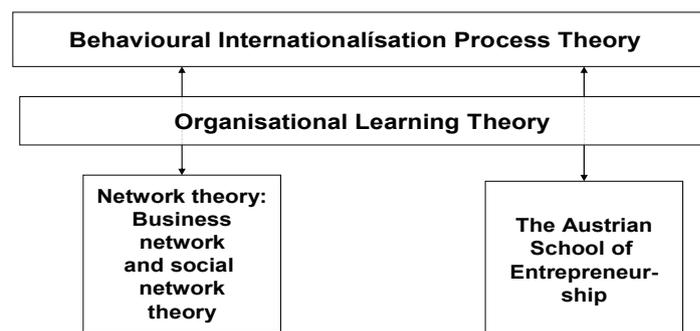
### **Summary of the theoretical framework used in this thesis**

The purpose of this thesis is to develop a deeper understanding of the internationalisation process of SMEs by studying how they develop foreign market knowledge during this process. For the purpose of this thesis, I have developed a theoretical framework to answer the three research questions presented in the introduction. The theoretical framework is summarised in Figure 2. As shown in this figure, behavioural internationalisation process theory—and the Uppsala model, in particular—provides a theoretical platform for studying firms' knowledge development. I then add arguments on opportunity discovery from the Austrian school with arguments presented in the Uppsala model. In so doing, this thesis enables an analysis of how key individuals' experiential knowledge, often developed in the pre-firm internationalisation phase, influences their ability to identify foreign market opportunities in a firm's initial internationalisation phase. To strengthen the analysis, social network theory and organisational learning theory are also used. Together, these perspectives provide a theoretical background for answering research question 1: *How do SMEs use their key individuals' experiential knowledge, developed in the pre-firm internationalisation phase, in their initial internationalisation phase?*

Social network theory and the concept of social capital are used together with the Uppsala model's view of knowledge development to analyse how key individuals' personal networks of relationships relate to an SME's development of foreign market knowledge in its initial internationalisation phase. Organisational learning theory is also applied to improve the analysis of how individual knowledge, developed from the personal network, is connected with organisational knowledge and a firm's behaviour. Together, these perspectives provide a theoretical background for answering research question

2: *How do SMEs develop foreign market knowledge from their key individuals' personal networks of relationships in their initial internationalisation phase?*

An integration of business network theory and the Uppsala model's view of knowledge development is used to analyse how an SME develops foreign market knowledge from its business network of relationships in its continued internationalisation phase. Organisational learning theory can improve the analysis by providing theoretical insights into elements of the knowledge development process of firms, which the Uppsala model has not included in its discussion. Together, these perspectives provide a theoretical background for answering research question 3: *How do SMEs develop foreign market knowledge from their business network of relationships in their continued internationalisation phase?*



**Figure 2** The theoretical framework used in this study.

## RESEARCH DESIGN

To explore the internationalisation process of SMEs, this thesis uses studies of Swedish SMEs. Like most countries of the OECD, Sweden has an economy in which SMEs represent between 96% and 99% of all enterprises (OECD, 2002). About 99% of Sweden's enterprises have fewer than 50 employees. The Swedish trade council has presented statistics on SME export activity for the 2002-2006 period. They show that during that period, small enterprises (up to 49 employees) increased their exports by 10.3%, medium-sized enterprises (50 to 199 employees) increased their exports by 5.7% and large enterprises (200

or more employees) increased their exports by 5.4%. Large enterprises, however, dominate Swedish exports. In 2006, large enterprises had total exports worth 671 billion Swedish kronor (SEK), compared with 129 billion SEK for medium-sized enterprises and 163 billion SEK for small enterprises (Swedish Trade Council, 2007).

### **The biotech industry**

The Swedish biotechnology industry, which is amongst the leading biotechnology industries in the world, is an example of an industry in which most firms are defined as SMEs and in which the pressure to internationalise is considerable. With a total of 230 biotechnology companies residing in the country, Sweden leads the world in the number of biotechnology companies per capita (SwedenBIO, 2005a). Most of these companies are small enterprises: 60% have fewer than 10 employees (SwedenBIO, 2005b) and 28% have between 10 and 49 employees. Sweden's biotechnology companies are located in three main clusters, all situated around major universities. The largest is located in the region of Stockholm–Uppsala. The other two clusters are located around Lund-Malmö and Gothenburg. The close collaborative ties established amongst academia, industry and hospitals that characterise the Swedish biotechnology industry have greatly benefited its growth. The industry has experienced the most rapid rate of growth of any sector in Sweden during the past 10 years (SwedenBIO, 2005c).

### **Empirical research design**

The empirical investigation in this thesis begins with a qualitative study of the internationalisation process of Swedish biotechnology SMEs. This study was conducted with my colleague, Emilia Rovira Nordman. By focusing on the biotechnology industry, we had the opportunity to follow 14 SMEs operating in a highly internationalised industry, which was characterised by rapid change and growth. Between January 2003 and the spring of 2005, we conducted in-depth interviews with the 14 firms. Since June 2005, we have continued to track their development by collecting secondary data and conducting brief phone interviews with them.

The second part of the empirical investigation in this thesis is a quantitative survey conducted by the research group, Internationalisation and Networks (Inet).<sup>2</sup> In 2005, the research group started to formulate a questionnaire about firms' acquisition, transfer and utilisation of knowledge

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<sup>2</sup> For more information about this research group, see <http://www.hhs.se/CMDID/Research/Pages/InetInternationalization.aspx>

within an international business network. The findings from qualitative case studies investigating the internationalisation of biotechnology SMEs comprised important input in the formulation of the questionnaire. During 2005, the questionnaire was sent to 233 SMEs in various industries located in the Mälardalen region of Sweden.

The empirical research design of this thesis, therefore, consists of both qualitative and quantitative data. The idea of using multiple methods to analyse one phenomenon, often referred to as triangulation (Jick, 1979), was developed from the understanding that all methods have limitations. Using multiple methods can enable scholars to neutralise or cancel the biases inherent in any single method (Creswell, 2003). Moreover, with multiple methods, it is possible to use the results from one method to develop and inform another method. One procedure for using mixed methods in a study is to start out by using a qualitative method for exploratory purposes and to follow up using a quantitative method with a large sample that enables the researcher to generalise results (Creswell, 2003). To fulfil the purpose of this thesis, I started the study by using qualitative methods to explore how SMEs develop foreign market knowledge in their internationalisation process. The findings generated from this qualitative study were then used to develop a questionnaire to survey SMEs about their international operations. Qualitative data in the form of in-depth interviews and observations of staff members at SMEs were then combined with quantitative survey data collected from chief executive officers (CEOs) and marketing managers at SMEs. Both qualitative and quantitative methods were used in an effort to understand more fully the internationalisation process of SMEs, based on the total data collected in the two studies.

Within the field of SME and born global research, existing literature reviews have indicated that the quantitative research method is the dominant research method used (Coviello and Jones, 2004; Rialp et al., 2005). Upon reviewing 55 empirical studies in the field, Coviello and Jones (2004) found that studies have focused on aggregate-level survey data or sector-specific qualitative data. Amongst the reviewed studies, surveys dominated; less than a quarter of the studies employed qualitative techniques. Few studies were longitudinal. Coviello and Jones described international entrepreneurship research as static because it has not incorporated time-dependent variables and would have difficulty revealing processes over time rather than behaviour at a given point in time. Similar findings were reported by Rialp et al. (2005), who acknowledged that amongst fully or partly quantitative survey-based studies, cross-sectional approaches tend to be more widely applied than purely

longitudinal ones. Coviello and Jones called for further research that utilises and develops longitudinal methodologies and that generates both qualitative and quantitative data. Other scholars in the field have also emphasised the use of multiple methods as a research strategy that should receive further attention (Hohenthal, 2006; Rialp et al., 2005).

### **Starting out with a qualitative study**

To describe more fully the qualitative study that my colleague and I conducted between 2003 and 2008, I will now outline the purpose of this study, the sample, the data collection and the methods of analysis.

#### *Purpose of the qualitative study*

The following question initially guided my doctoral research: How do SMEs develop foreign market knowledge in their internationalisation process? Previous studies within the research field offered some useful insights, but they also acknowledged a need for more research that explored and described the internationalisation process of SMEs. Moreover, existing theories were criticised for their lack of validity in understanding the internationalisation process of SMEs (Knight and Cavusgil, 1996; McDougall et al., 1994). Theory development within the field was also called for (Yli-Renko et al., 2002).

The qualitative method is believed to be advantageous when examining a phenomenon about which little research has been conducted (Creswell, 2003). Qualitative research is exploratory and is, thus, useful when existing theories do not apply and the researcher does not know the important variables to examine (Creswell, 2003). Moreover, conducting qualitative (informal) interviews and observations is believed to provide enhanced opportunities for the study of processes (Gummesson, 1991). In this thesis, I wanted to study the internationalisation process of SMEs. Existing theory had been criticised, and I did not know which variables were the most important to examine. A qualitative method, therefore, proved to be the most useful approach to begin my research. I decided to use the case study approach because it is a research strategy that focuses on understanding the dynamics present within single settings (Eisenhardt, 1989), allowing a researcher to explore an event, activity or process in-depth (Creswell, 2003). Yin (2003) points out that the need for case studies arises out of the desire to understand a complex social phenomenon. A case study allows a researcher to retain the holistic and meaningful characteristics of real-life events, such as the internationalisation process of an SME.

Eisenhardt (1989) points out that the case study approach can be used to accomplish various aims, such as testing theories, providing descriptions and generating new theories. In this qualitative study, I use the case study approach to develop behavioural internationalisation process theory and theory about the internationalisation process of SMEs.

### *Sample*

The qualitative study is focused on the Swedish biotech industry because it is an example of a highly internationalised industry characterised by rapid change and growth. The first SME chosen for the qualitative study was a small biotech firm with which we came in contact through the help of our supervisor, who knew the founder on a personal basis. After conducting a few interviews with employees at this firm, we continued to look for other firms that would meet our criteria. In so doing, we selected the case firms from 'The Swedish Biotech Industry Guide', a database that lists and offers information about most Swedish biotech firms. We chose to focus on the large biotech cluster in Uppsala because this concentration of firms in a single location facilitated data collection by providing continuous access to the founders and managers within the firms. To be included in this study, potential case firms also had to have their founders still working at their firms, had to conduct their own research and development (R&D) and must have at least one product sold in a foreign (i.e., non-Swedish) market. These criteria were chosen so that we could find internationally active firms capable of managing the production chain themselves: from R&D to the interaction with international actors. These criteria limited the number of potential cases. We chose to contact qualified candidate case firms randomly. We started by contacting one firm by telephone and gradually continued to add firms in the same manner. All of the firms that we contacted agreed to participate in the study. Data collection was stopped after 14 companies had been visited. Because the interviews conducted at the last few firms provided us with narratives similar to those we had previously heard, the theoretical saturation point seemed to have been reached. New insights into the phenomenon (of SME internationalisation) were no longer gained, and the phenomenon, therefore, had been substantially explained (Glaser and Strauss, 1967). The theoretical saturation also indicated that it was unlikely that we would draw an incremental improvement of theory if we were to continue investigating more firms (Eisenhardt, 1989).

Table 1 summarises the 14 SMEs that were used as case studies in our qualitative study. As shown in the table, the studied firms were founded in the 1980s, 1990s or 2000s. Table 1 also shows that eight firms (companies 2, 3, 5,

6, 9, 10, 11 and 12) had their first foreign sale within three years of founding, which is a commonly used measure for operationalising born globals (see Knight et al., 2004). Moreover, these firms are less than 20 years old, which further supports an operationalisation of these firms into born globals (see Knight et al., 2004).

**Table 1** Data collected from the 14 SMEs in 2003, the initial year of the qualitative study.

Firm	Develops and sells (Business)	Founded	Year of first foreign sale	No. of staff	Foreign sales sub-sidiaries	Turnover (thousands of USD)	Net profit/loss (thousands of USD)	Inter-views
1	Tests for detection and monitoring of viral diseases	1984	1995	16	0	350	-3381	2
2	Products for biological control and plant growth stimulation	1996	1998	13	0	922	-1091	1
3	High-quality biochemicals for the life science industry	1995	1995/1996	10	0	1076	123	5
4	Products based on bioceramic technology	1987	2000/2001	22	0	84	-4648	2
5	Ready-made adjuvants for animal vaccine development	1999	1999/2000	7	0	933	-516	2
6	Diagnostic products in the areas of veterinary medicine and food safety	2001	2001/2002	25	0	2450	-494	4
7	Products for DNA identification and quantification	1990	1998	12	0	0	-3158	1
8	Products aimed at predicting the onset of arthritic diseases	1998	2001	9	0	250	-1469	1
9	Products for genetic analysis in clinical research	1997	1999/2000	90	5	11 950	-24 256	4
10	Microfluidic solutions for the life science industry	2000	2000/2001	70	3	639	-28 048	5
11	Microsystems for the life science industry	1998	1999	29	0	2012	-2725	11
12	New drugs and dosage forms for improved drug treatment	1995	1997	19	0	2756	-3075	1
13	Medical devices for the field of interventional cardiology	1988	1998	150	8	33 438	1469	2
14	Kits based on immunological reactions	1991	1994	26	1	4358	252	1

### *Data collection*

To investigate the internationalisation process of these SMEs, we chose to conduct interviews with the group of founders and managers who had been most responsible for managing the firms' internationalisation process. The first interviewees were always (one of) the founders. They, in turn, helped us identify other individuals who had been most involved in handling the internationalisation process of the firms (Yin, 2003).

Between January 2003 and June 2005, we conducted face-to-face interviews.<sup>3</sup> Forty-two face-to-face, semi-structured interviews were conducted with founders and managers at the 14 firms. Interview times ranged from 40 to 160 minutes per interview, with an average duration of around 120 minutes. All of the interviews, except for one that was conducted at a trade fair, were held at the firms' head offices in Uppsala, which enabled us to form a more in-depth characterisation of the individuals and places that we visited (Creswell, 2003). In interviewing these firms, we started to ask questions about the firm's history, such as the action that had been taken in foreign markets and how the firm had been organised in its start. We then asked questions about the firm's present activities and organisation. Finally, some questions touched upon a variety of topics, including the future and the firm's expectations and goals.

A major strength of case study data collection is the opportunity to use different sources of evidence (Creswell, 2003; Yin, 2003). Multiple sources of evidence are also particularly important in terms of strengthening the construct validity. In addition to conducting semi-structured interviews with different employees at most of the sites, we used archival documentation from the firms and information about the firms collected from databases such as master theses, articles and annual reports. Another source of data came from our observations made in conjunction with our visits to the firm and the interviews conducted with staff at the firm.

To increase the reliability of the study, we kept a detailed account of our activities in a research protocol, which included transcripts of the audiotape recordings from all of the interviews, transcripts of our field notes and observations and transcripts of the secondary data. Because the goal of reliability is to minimise errors and biases in a study, we enlisted two researchers to conduct the interviews at the investigated firms. The convergence of observations from multiple investigators enhances confidence in the findings and may even augment the creative potential of a study because complementary insights increase the richness of data (Eisenhardt, 1989).

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<sup>3</sup>Since June 2005, we have continued to follow the development of these firms by collecting secondary data and conducting brief phone interviews with respondents at the investigated firms.

### *Methods of analysis*

Prior to the start of the qualitative study, I conducted a literature review on the latest studies made in the area of SME internationalisation. The literature review was carried out with the participation of my colleague, Emilia Rovira Nordman. The review gave us additional theoretical knowledge about the traditional internationalisation theories and the empirical findings made in these studies.

Based on this theoretical knowledge, we formulated an informal questionnaire with open-ended questions. The first part of my doctoral research can, therefore, be described as deductive because we started our empirical data collection with a theoretical knowledge framework in mind.

After the interviews had been conducted and new empirical data had been acquired, the theoretical framework was reformulated and modified. The modified theoretical framework was then used in future interviews. In this process of moving back and forth between theory and empirical findings, we realised that some of the SMEs in the qualitative study had much in common with the born global literature. Moreover, analysing the data from our 14 SMEs showed that 8 of the 14 SMEs could be defined as born globals, according to the commonly used operationalisation presented by Knight et al. (2004). The new empirical findings concerning the internationalisation process of born globals presented new empirical input that again made us reformulate our theoretical propositions in the empirical data collection process.

The process of moving back and forth between theory and empirical findings is described by Alvesson and Sköldbberg (1994) as abduction. Abduction is an analytical method that combines the deductive approach with the inductive approach. An empirical case is interpreted with an overall hypothetical pattern, and the interpretation is then verified by further empirical evidence (Alvesson and Sköldbberg, 1994). Alvesson and Sköldbberg's analytical method of abduction is similar to what Silverman (1993) describes as analytical induction, in which an initial hypothesis is tested with empirical data. Yin (2003) mentions a similar analytical approach in his explanation building analytical strategy where the researcher starts out with some initial theoretical propositions and compares the findings of an initial case with the theoretical propositions. Propositions are then revised and further empirical findings acquired and the process continues.

Alvesson and Sköldbberg (1994), Silverman (1993) and Yin (2003) all describe important elements in the analytical process that I have used in the qualitative study. It is a process of moving back and forth between the

theoretical framework and the empirical data that have been acquired between 2003 and 2008.

### **Continuing with a quantitative study**

The qualitative study demonstrated that the network relationships in which SMEs were embedded were important in their internationalisation process and in their development of foreign market knowledge. The findings made in the qualitative case studies served as input for the quantitative survey study, conducted within the research group Inet. Other case studies conducted within the group came up with similar results to the findings made in our study (Hohenthal, 2001; Lindstrand, 2003b). Three sources were, therefore, used to formulate the questionnaire: our qualitative case studies, other case studies conducted in the research group and the results from previous questionnaires carried out by the research group.

#### *Purpose of the quantitative study*

The purpose of this quantitative study was to develop hypotheses that relate the business network relationships of an SME to its development of foreign market knowledge. Through our questionnaire, we collected data on the network of exchange in which the respondent firm takes part. The questionnaire aims to map the relationships that the respondent firms have with Swedish and international customers, customers' customers, suppliers, suppliers' suppliers, complementary suppliers, competitors, consultants and banks and financial institutions.

#### *The design of the questionnaire*

The results from our qualitative research and other empirical studies (Lindstrand, 2003b) together with earlier questionnaires developed in our research group, such as the surveys from 1984 (Sharma and Johanson, 1987), 1995 (Eriksson et al., 1997) and 1998 (Hohenthal, 2001), were used to formulate the questionnaire. As a means to ensure the reliability of the data, we tested a first draft of the questionnaire on six SMEs located in Stockholm and Uppsala. The test respondents filled out the questionnaire with a member of the research team present. Whilst the respondents answered the questionnaires, they related how they understood the questions and what they thought about when answering them. Pre-testing revealed that the questionnaire was too long and too comprehensive; thus, modifications were needed. We then gathered the research group for a meeting to discuss how we could improve the questionnaire. In the introductory letter presented to the

respondents, we now pointed out that the results of the study would be treated confidentially. A final draft was then outlined.<sup>4</sup>

The questionnaire included a new combination of questions about a particular scenario and perceptive measures of acquisition, transfer and utilisation of knowledge. A seven-item Likert scale, ranging from low to high, was mainly used to check the respondent's views on the various questions. The scenario was a real-life international assignment of critical importance to the firm. This scenario was chosen and described by the respondent. The respondent was asked to rate how important various types of experiences were in carrying out the assignment, what influenced the acquisition of the experience (social ties, network configuration, previous knowledge) and the content of the relationships in the network. The respondent was also asked to rate the types of knowledge the firm lacked and how difficult it was to gather new knowledge. Some subjective performance questions were also asked so that we could compare the answers to the objective information being collected. When a respondent begins to fill out the questionnaire, the respondent is presented with the following introduction:

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.

The questionnaire was 14 A4 pages in length and included the measurement of 322 variables. The questionnaire was divided into three parts. Part one was designed to answer general questions about the firm that could not be collected from secondary sources. These questions, amongst other things, addressed in which year the firm had its first foreign sale, how many patents the firm has (if any) and how many new customers the firm has sold products or services to during the past year. The second part of the questionnaire was an effort to map the respondent firm's relationship with a specific international business partner (a customer, distributor or another intermediary). The questions in this part concerned, amongst other things, the importance of the specific business relationship when developing new products, technology and knowledge. The

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<sup>4</sup>The questionnaire is attached in Appendix 1.

last part of the questionnaire endeavoured to map the local and international business network of the firm and the actors that surround the specific business relationship. That part of the questionnaire also asked questions about the knowledge drawn from past experiences.

In addition to the questionnaire, background data about the firms were collected from secondary sources. The objective data included information about age, size, export, year of international presence, financial information and information about products. In total, the objective data encompassed 29 variables in our database.<sup>5</sup>

#### *Sample and data collection*

The questionnaire was sent to Swedish small and medium-sized enterprises that are involved in international activities. To ensure that the questionnaire was distributed to a random sample of firms, we utilised data from Statistics Sweden's Business Register. At least 10% of the sampled SMEs' turnovers resulted from export activities, and all kinds of business sectors were included in the sample.

From Statistics Sweden's Business Register (SCBs Företagsregister, 2003) we received data from a stratified random sample of two subgroups: small firms (6-49 employees) and medium-sized firms (50-250 employees). From each of these two populations, we received a sample of 1000 firms. The sample covered about 28% of the small firms that we were interested in investigating and 90% of the medium-sized firms. We chose a stratified random sample from the whole population because we expected differences between firms of various sizes; a random sample from the whole population of firms would give us a very large group of small firms.

To limit our sample size further, we collected data from SMEs in the geographical area of Mälardalen and, in particular, the cities of Stockholm and Uppsala. The sample that we received from Statistics Sweden in the Mälardalen area consisted of 339 firms. After individuals in the sampled SMEs were contacted by telephone, some firms were excluded from the sample because they were too large (i.e., they were not SMEs), they did not sell their product to foreign customers (i.e., they did not manage any foreign relationships) or they no longer existed. Our total sample included 233 SMEs.

To ensure the reliability of the data, we distributed the questionnaire in person and met the key informants involved in international activities. This assured us that the right person answered the questionnaire. The research group

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<sup>5</sup>The objective data were acquired from the database Affärsdata, [www.ad.se](http://www.ad.se)

members contacted the companies by telephone to arrange appointments with the CEOs, marketing managers or export managers. The companies were, thereafter, visited, and the research group members waited as the respondents filled out the questionnaire. If the respondents had any inquiries about the questions asked in the questionnaire, we answered their inquiries. We want to point out that we did not give any kind of feedback concerning right or wrong answers. After the individuals had answered all the questions, we asked the individuals to tell us about the international assignment that they had thought about whilst answering the questions. The information that was given by the interviewee was then written down on the back of the last page of the respondent's questionnaire. In some cases, the individual who had filled out the questionnaire was unsure about one or two questions. The individual was then allowed to call or go and ask some other person in the firm who had the correct information. In so doing, the reliability of the data collected was increased.

By using this data collection method, we have reduced the occurrence of missing values and increased the response rate. From the sample of 233 firms, 188 SMEs answered the questionnaire. We, therefore, have a response rate of 81%. The two major reasons why firms did not participate were a lack of time and a resistance to giving out information. Although a response rate of 81% is high compared with similar studies, a non-response bias has been considered. Because the surveys were collected at a scheduled meeting with the respondents, it was not possible to detect non-response bias by applying a common test (e.g., comparing early and late responses) (Armstrong and Overton, 1977). Secondary data from Statistics Sweden's Business Register were instead used to control for differences in industry, size, location and level of internationalisation between responding and non-responding firms. No differences between the groups were found; a non-response bias, therefore, is not likely to be a problem in interpreting the results of this study.

Tables 2 to 6 present background information on the sample in the quantitative study. In Table 2, the 188 SMEs are divided into small and medium-sized firms. The group of small firms has 1 to 49 employees, and the group of medium-sized firms has 50 to 250 employees. In the cross tabulation between number of employees and sales abroad, Table 2 shows that amongst the medium-sized firms, most firms have a high share of sales abroad. Amongst the small firms, there is a greater variety in terms of the share of sales abroad. As shown in Table 2, most small firms have a share of sales abroad described as low or medium.

**Table 2** Missing values: N:1

Number of employees	Sales abroad (share of total sales)			
	Low (0%-33%)	Medium (34%-66%)	High (67%-100%)	Total
1-49	43 (35,0 %)	42 (34,1 %)	38 (30,9%)	123 (100%)
50-250	11 (17,2%)	16 (25,0%)	37 (57,8%)	64 (100%)

Table 3 shows a cross tabulation between number of employees and year of founding. The data show that amongst both small and medium-sized firms, most firms were founded between 1984 and 2004. Only 19 firms in the sample (7 small firms and 12 medium-sized firms) were founded between 1915 and 1949.

**Table 3** Missing values: N:0

Number of employees	Year of founding			Total
	1915-1949	1950-1983	1984-2004	
1-49	7 (5,7%)	36 (29,3%)	80 (65,0%)	123 (100%)
50-250	12(18,5%)	25(38,5%)	28 (43,1%)	65 (100%)

Table 4 shows a cross tabulation between number of employees and number of patents. It shows that most of the small firms do not have patents. Amongst the medium-sized firms, most firms have 1 to 10 patents.

**Table 4** Missing values: N:8

Number of employees	Number of Patents			Total
	0	1-10	11-220	
1-49	82 (69,5%)	33 (28,0%)	3 (2,5%)	118 (100%)
50-250	21 (33,9%)	28 (45,2%)	13 (21,0%)	62 (100%)

By relating the number of patents to the share of sales abroad, the cross tabulation presented in Table 5 shows that amongst those firms that do not have patents, most firms have a low share of sales abroad. Amongst those firms that have 1 to 10 patents, most firms have a high share of sales abroad. Similar patterns are found amongst those firms that have 11 to 220 patents.

**Table 5** Missing values: N:8

Number of patents	Sales abroad (share of total sales)			Total
	Low (0%-33%)	Medium (34%-66%)	High (67%-100%)	
0	43(41,7%)	35(34,0%)	25(24,3%)	103 (100%)
1-10	9(14,8%)	16(26,2%)	36(59,0)	61 (100%)
11-220	1(6,2%)	4 (25,0)	11(68,8%)	16 (100%)

Table 6 shows a cross tabulation of number of patents and year of first foreign sale. It is shown that amongst those firms with no patents, most firms had their first foreign sale between 1981 and 1999. Of those firms that have one or more patents, most firms had their first foreign sale between 1640 and 1980.

**Table 6** Missing values: N:11

Number of patents	Year of first foreign sale			Total
	1640-1980	1981-1999	2000-2004	
0	28 (27,7%)	61 (60,4%)	12 (11,9%)	101 (100%)
1-10	32 (53,3%)	20 (33,3%)	8 (13,3)	60 (100%)
11-220	8 (50,0%)	3 (18,8)	5 (31,2%)	16 (100%)

In summary, the cross tabulations indicate that a high number of employees (i.e., the larger the size of a firm) is positively related to the share of foreign sales (Table 2). The number of employees also appears to be positively related to the number of patents in the firm (Table 4). Moreover, Table 5 indicates that the more patents a firm has, the higher its share of sales abroad. The data presented above also show that most firms were founded between 1984 and 2004 (Table 3). The data in Table 6 indicate that those firms in the sample that have patents have been operating abroad for a longer time than those firms with no patents.

#### *Measurements and operationalisation of variables*

To devise valid measurements of the constructs that are of interest in this quantitative study, we conducted literature reviews to look for accepted measures used by other scholars in the field. Some of these accepted measures had been used in prior questionnaires designed and used within the research group (e.g., Eriksson et al., 1997; Hohenthal, 2001; Lindstrand, 2003a). We also used the interviews created in the qualitative study to enhance our knowledge of how to measure the constructs. In summary, two sources were used to develop valid measures: previously accepted measurements based on literature reviews and interviews conducted within the qualitative study.

We used multiple-item constructs, which means that several measurements are used for each construct. Experiences from previous questionnaires together with the existing literature have pointed towards the use of multiple-item constructs instead of single-item constructs.

#### *Methods of analysis*

The quantitative data used in article 6 were analysed using LISREL, which is a structural equation modelling technique that traces structural relations in a set of data (Jöreskog and Sörbom, 1993). LISREL is based on two components: a set of indicators that are used to represent a higher order variable and a causal relation between the higher order variables. The higher order variable is the construct, which represents latent common properties of the indicators.

The validity of a LISREL model is assessed in two steps. In the first step, the validity of the constructs in the model is tested to ensure that the indicators are valid measures of the theoretically deduced construct. Convergent validity tests for the homogeneity of constructs by analysing the  $t$ -values,  $R^2$ -values and coefficients of each relationship in the model. Discriminant validity controls for the extent of separation between constructs. As a further test of the validity of the constructs, I have in article 6 created a measurement model with no causal relations (Jöreskog and Sörbom, 1993, p. 15-19). The measurement model also controls for discriminant validity, in confirming that the indicators for each construct do not load for any other construct.

In the second step, the validity of the entire LISREL model is assessed, which means that nomological validity is tested. Following the recommendation of Jöreskog and Sörbom (1993, p. 111-131), the validity of the entire model presented in article 6 was measured using  $\chi^2$  and probability measures, which are indicators of the match between model and data. I have, furthermore, applied three commonly used measures for testing nomological validity: (1) the goodness-of-fit index (GFI), (2) the root mean square error of approximation (RMSEA) and (3) the comparative fit index (CFI). The GFI checks for sample-size effects and should be above 0.90. The RMSEA measures population discrepancy per degree of freedom and should be below 0.08. The CFI checks for non-normal distributions and should exceed 0.90.

To test the model further, the LISREL method allows group analysis to be carried out, which tests for equivalence across groups and assumes that the key statistics of the structural model are equal across groups. The three major components of a structural model that are set equal across groups are construct relations, indicator relations and error covariances (Jöreskog and Sörbom,

1993, p.53). If the estimates for validity are not confirmed in the group analysis, the structural model differs between groups.

Two common ways of handling missing values are through pairwise deletion and listwise deletion (Eriksson, 1998). In listwise deletion, those respondents that have missing values on their questionnaire are not included in the analysis. In pairwise deletion, only those variables in the questionnaire with missing values are deleted, meaning that a respondent who has missing values is included in the analysis. I used pairwise deletion to account for missing values; the results in the model were also tested using listwise deletion.

## **THE STRUCTURE OF THE THESIS**

The thesis comprises six articles that analyse SME development of foreign market knowledge in the internationalisation process. The six articles differ in what phases of the internationalisation process are under investigation and what activities are analysed. Together, the six studies help develop a deeper understanding of the internationalisation process of SMEs.

### **Article 1 ‘The value of human capital for the networks of born globals’**

(co-authored with Emilia Rovira Nordman, published 2007 in *International Journal of Globalisation and Small Business*, 2 (2), 205-219.)

The first article is based on a longitudinal, in-depth case study of a born global firm. We used a qualitative case study approach, and the study covered all three phases of the internationalisation process. This article, therefore, provides a relatively broad analysis of what characterises a born global’s development of foreign market knowledge in the various phases. This article presents findings that are developed and analysed in more depth in the other articles in this thesis.

The purpose of this article is to explore how a born global uses its network to learn during its internationalisation and how human capital influences this learning process. This study relies on behavioural internationalisation process theory together with business network theory and social network theory. The case study of Alpha, a born global active in the Swedish biotech industry, focuses on three stages in the company’s internationalisation: the international establishment phase between 1999 and 2002, the reorganisation phase between 2002 and 2003 and the new market phase from 2004 to the present. Alpha was founded in 1998, and the company had its first foreign sale in 1999. Within six years after founding, Alpha’s export percentage compared with total sales was 70%. Alpha is a typical born

global firm—it had its first foreign sale within three years of founding and generates at least 25% of total sales from abroad (see Knight et al., 2004 for an operationalisation of a born global firm). The three stages of Alpha's internationalisation under investigation in this study are based on an empirical analysis, but these stages capture the three theoretical derived phases as illustrated in this thesis. The pre-firm internationalisation phase and the initial internationalisation phase were analysed in Alpha's international establishment phase, and Alpha's reorganisation and new market phases captured its continued internationalisation phase.

The case study demonstrates that the personal networks of founders and managers are often used to provide born globals with important foreign market knowledge. The case study also shows that it is the human capital that decides what relationships a born global uses in its early internationalisation. We argue that it is the human capital of founders and managers that influences a born global firm's initial learning processes. In article 1, we, therefore, conclude that the human capital in a born global firm will influence the conditions in which learning occurs, which means that it influences with whom and where interactions and learning take place. We also demonstrate in this article that a born global's use of its networks differs at various phases in the firm's internationalisation. In Alpha's international establishment phase, the founder's personal network was used to acquire knowledge of potential foreign customers. The founder's personal network could, however, not provide the firm with the knowledge needed for initiating new foreign customer relationships in the reorganisation phase. In this phase, Alpha instead grafted six account managers internally to focus on initiating new foreign customers. The new market phase was a result of what was learned from interactions within Alpha's business network relationships. In the new market phase, Alpha grafted a new CEO and two consultants to acquire the needed knowledge and obtain access to new personal and business networks.

**Article 2 'The impact of different kinds of knowledge for the internationalization process of born globals in the biotech business'**

(co-authored with Emilia Rovira Nordman, published 2008 in *Journal of World Business*, **43** (2), 171-185.)

The article expands on the findings from article 1 by means of a cross-case analysis of eight biotech born globals. By using a qualitative case study approach, this article examines in more depth the previously acquired experiential knowledge of founders and managers in born globals and how this

experiential knowledge relates to these firms' internationalisation process. The purpose is to explore how the levels of international and technological knowledge of founders and managers at born global firms are related to the firms' discovery and exploitation of foreign market opportunities. International knowledge is defined as experiential knowledge about conducting business within an international setting. Technological knowledge is defined as experiential knowledge about the technology upon which the born global firm's products are built. In this article, we integrate arguments from the Austrian school of entrepreneurship with aspects of the Uppsala internationalisation process model. The analysis covers the pre-firm internationalisation phase and the initial internationalisation phase.

The analysis highlights that all the investigated born globals' founders and managers possess high levels of technological knowledge, but they differ in their levels of international knowledge. Based on the analysis of the levels of international and technological knowledge of all eight firms' founders and managers, we identify two subgroups in our sample. The first group consisted of firms that were started and initially managed by individuals who possessed an experiential knowledge combination consisting of high levels of both technological knowledge and international knowledge. We labelled this group of born globals as the 'born industrials'. The other group consisted of firms that were founded and initially managed by researchers with academic backgrounds, who possessed high levels of technological knowledge and low levels of international knowledge. This group of born globals was labelled the 'born academics'. The analysis shows that the two groups of born globals differ in how they discover and exploit foreign market opportunities in their internationalisation process. We make an important contribution to existing born global research by showing that it is important to start analysing born globals as a heterogeneous group of firms. This article shows that such an analytical perspective can provide new insights into these firms' internationalisation process.

### **Article 3 'Turning social capital into business: A study of internationalization in biotech SMEs'**

(co-authored with Angelika Lindstrand and Emilia Rovira Nordman, revised and resubmitted to *International Business Review*)

The third article draws on the findings in article 1 by studying more thoroughly how high-tech SMEs acquire the critical resources for internationalisation from the personal networks of key individuals. This study takes the findings from

article 1 one step further by merging personal networks and resource acquisition into the concept of social capital. By focusing on the concept of social capital, this study allows a more in-depth understanding of high-tech SMEs' abilities to acquire critical resources via their personal networks in the internationalisation process. In comparison to articles 1 and 2, this article uses a sample of 14 high-tech SMEs. The sample includes both born globals and non-born globals. The analysis covers all three phases of the internationalisation process. The purpose is to examine the effects of individuals' social capital dimensions on biotech SMEs' acquisition of foreign market knowledge and financial resources in their internationalisation process.

In article 3, we used a qualitative, longitudinal, multiple-case-study approach with 14 Swedish biotech SMEs. Based on an extensive empirical comparison of 14 firms, we determined that they could be divided into three groups based on the structural dimensions of their social capital. The first group is the academic firms, which are founded and managed by researchers from academia with predominantly academic experiences and networks. The metamorphic firms comprise the second group; these SMEs are founded by researchers but later changed as managers with business experiences and networks are grafted to oversee international development. The third group is the industrial firms, which are founded and managed by individuals with both academic and business experiences and networks.

Our analysis of the three subgroups of high-tech SMEs and their use of social capital reveals how the social capital dimensions of key individuals relate to an SME's development of foreign market knowledge. We show that all three dimensions of social capital are needed to acquire foreign market knowledge and financial resources. We also demonstrate that in the rapidly changing markets in which biotech SMEs operate, there are challenges connected to the usefulness of individual social capital. We find that the risk of superstitious learning is high when the biotech SME believes that the social capital and foreign market knowledge of founding and grafted individuals can result in fast and successful internationalisation. The findings in this article present interesting contributions to the debate regarding the speed of the internationalisation process by showing that the most rapid internationalisation is not necessarily the most successful.

**Article 4 ‘The acquisition of foreign market knowledge- A high-tech SME’s usage of ICTs’**

(published 2006 in *Managing Customer Relationships on the Internet*, (eds) A. Lindstrand, J. Johanson and D. D. Sharma, pp. 223-244, Elsevier, Oxford, UK.)

This article is a qualitative case study of a high-tech SME’s acquisition of foreign market knowledge. This study focuses on a small firm’s interaction with existing and new customers in a foreign market and how foreign market knowledge is acquired in these interactions. In addition, this study considers a high-tech SME’s use of information and communication technologies (ICTs). The concept of foreign market knowledge is, in this article, concentrated on market-specific knowledge (Eriksson et al., 1997), and foreign market knowledge is defined as experiential knowledge of clients, the market and competitors. The analysis is based on business network theory, and the internationalisation phases examined in this article are the initial and continued internationalisation phases.

The case study points to the shortcomings of ICTs in the case company’s attempts to initiate new customer relationships. Whereas the Internet has aided in the search for new potential customers, personal relationships are needed to initiate product exchange with new customers. The case also demonstrates that in the case company’s existing customer relationships, there is mostly no need for any intensive information exchange. Furthermore, the information exchange that exists is to a large extent initiated by the customers when they have questions about the product. This case study provides indications about the relationships amongst the customers’ need for information, the level of intensity in the information exchange and a high-tech SME’s acquisition of foreign market knowledge.

**Article 5 ‘The internationalisation modes of Born Globals: A longitudinal study’**

(co-authored with Emilia Rovira Nordman, Published 2009 in *European Management Journal*, doi:10.1016/j.emj.2008.11.004.)

In this article, we use a qualitative case study approach to analyse in greater depth the internationalisation behaviour of born globals in their continued internationalisation phase. This study expands on the findings presented in article 4 about how a high-tech SME interacts with its foreign customers and acquires foreign market knowledge by means of a cross-case analysis of eight

born globals operating within the biotech field. The analysis centres on born globals' business relationships with foreign customers in their initial and continued internationalisation phases.

The purpose of this study is to explore which internationalisation modes born globals use during their initial and continued internationalisation. The term *internationalisation mode* refers to the organisational structure that companies use to enter and penetrate foreign markets (Agndal and Chetty, 2007). Given the purpose of the paper, we broaden the definition to include the internationalisation modes used by companies when they first enter foreign markets and in their continued internationalisation. The study creates a theoretical framework by integrating behavioural internationalisation process theory with international entrepreneurship research.

We identify three broad patterns of internationalisation behaviour amongst the studied born globals, which we label *the low committers*, *the incremental committers* and *the high committers*. The low committers begin their internationalisation by using low-commitment internationalisation modes, such as direct export modes. These firms do not engage in high-commitment modes or change internationalisation modes during their internationalisation. These companies also see themselves as being on the right track and do not plan to make any higher commitments such as sales subsidiaries in foreign markets. The incremental committers begin their internationalisation using low-commitment internationalisation modes, such as distributors or agents. These companies' interactions with foreign customers are, moreover, predominantly managed by their foreign distributors. In contrast to the low committers, the incremental committers change internationalisation modes in some markets during their continued internationalisation. By establishing relationships with foreign business partners, they increase their commitment to these specific markets. The high committers begin their internationalisation by using high-commitment internationalisation modes in their most important foreign markets and low-commitment modes in less important foreign markets. These firms perceive it to be important to be close to foreign customers and receive instant feedback about customers' opinions of products. The changes made in the high committers' continued internationalisation, however, point to two diverse paths: (1) a continued increase in resource commitments and use of high-commitment internationalisation modes and (2) a decrease in resource commitments demonstrated in the liquidation of high-commitment internationalisation modes, such as foreign subsidiaries.

The findings in this article show a great variety in the internationalisation modes that the studied firms used during their

internationalisation process. Moreover, the speed at which resources are committed to foreign market operations varied greatly amongst these three groups of born globals. The study also shows that the differences in internationalisation modes used and resources committed amongst the firms are related to differences in their development of foreign customer knowledge. We define foreign customer knowledge as experiential knowledge about the characteristics of foreign customers and ways to interact with these types of customers, as well as knowledge about foreign customers' needs, demands and problem-solving approaches. The study contributes to the debate of the speed of the internationalisation process by showing that a rapid increase in resource commitments during initial internationalisation is not necessarily followed by a further increase in resource commitments during continued internationalisation.

**Article 6 'SMEs' knowledge development in foreign markets: The effects of knowledge intensity'**

(accepted for publication in *International Journal of Business and Globalisation*, 4 (2).)

This article is based on a quantitative, questionnaire-based survey. Data from 188 Swedish SMEs have been processed using LISREL, a structural equation modelling technique. The purpose of the article is to examine the effects of SMEs' knowledge intensity on their development of specific customer knowledge. Specific customer knowledge is defined as in-depth knowledge about a foreign customer's needs, demands and ways of solving problems. Based on previous research (Autio et al., 2000, p.913), this study defines knowledge intensity as the extent to which a firm depends on the knowledge inherent in its activities and outputs as a source of growth. Articles 4 and 5 provided qualitative findings of how high-tech SMEs and born globals interact with their foreign customers and acquire knowledge about these companies. This quantitative article shows that knowledge intensity enhances an SME's ability to learn from its interactions with foreign customers. These results are important because they indicate that an SME's knowledge intensity makes it easier for that SME to develop new knowledge about its customers abroad. Thus, the results of this study indicate that an SME's knowledge intensity could facilitate its internationalisation.

In this article, I also present findings showing that the effects of knowledge intensity on knowledge development differ amongst SMEs, depending on the number of years from inception an SME starts its

internationalisation. The findings present interesting input to the discussion of the differences between born globals and other SMEs in terms of knowledge development and internationalisation process.

### **DISCUSSION OF FINDINGS AND CONTRIBUTIONS**

The introduction chapter of this thesis acknowledged that different views about the internationalisation process of SMEs started to emerge within the field during the 1990s. I have shown that the discrepancy within the field has given attention to new research questions and missing links in the SME literature. This thesis has contributed further insights into these research gaps. The purpose of this thesis is to develop a deeper understanding of the internationalisation process of SMEs by studying how SMEs develop foreign market knowledge during this process. To accomplish this, I have added new theoretical perspectives to behavioural internationalisation process theory and the Uppsala model's view on knowledge development. I have also chosen to illustrate the internationalisation process by dividing it into three phases: the pre-firm internationalisation phase, the initial internationalisation phase and the continued internationalisation phase. From an empirical point of view, this thesis has contributed to existing research by presenting the internationalisation process of SMEs and born globals from a longitudinal perspective and analysing differences and similarities between cases of born globals and other SMEs within this process. This empirical contribution is important because existing studies in the field have highlighted that there is a lack of longitudinal studies about born globals (Coviello and Jones, 2004; Rialp et al., 2005). Because existing research to a large extent has adopted a static perspective, those studies have not been able to interpret the phenomenon of SMEs' and born globals' internationalisation from a process perspective. The six articles of this thesis present findings about each of the three internationalisation phases and those activities that relate to a firm's development of foreign market knowledge within these phases. The six articles thus present findings that answer the three research questions presented in this thesis. In the following section, I discuss these findings and their contribution to literature on the internationalisation process of SMEs and behavioural internationalisation process theory.

#### **Contributions to literature on the internationalisation process of SMEs**

Figure 3 summarises the six articles and their main focuses in terms of the internationalisation phase. Articles 1 and 3 capture all three phases in the internationalisation process. These articles have contributed findings about

how born globals and high-tech SMEs acquire their critical resources, such as foreign market knowledge, from their key individuals' personal networks of relationships and the challenges involved in these activities. Article 2 develops the findings presented in article 1 about the importance of key individuals' experiences and knowledge by analysing how key individuals' experiential knowledge, developed during the pre-firm internationalisation phase, relates to the firm's behaviour in the initial internationalisation phase. Articles 4, 5 and 6 focus on born globals' and high-tech SMEs' activities in the initial and continued internationalisation phases. Their main focus is on the business networks of these firms and how they develop foreign market knowledge in their foreign business relationships.



**Figure 3** The six articles presented in this thesis.

Together, the six articles present findings that answer the three research questions discussed below.

*How do SMEs use their key individuals' experiential knowledge, developed in the pre-firm internationalisation phase, in their initial internationalisation phase?*

The literature reviews presented in this thesis have shown that during the past decade and a half, an intensive discussion has occurred within SME and born global literature regarding the importance of those experiences that founders and managers of these firms possess. This thesis makes an important

theoretical contribution to the field by relating those experiences that key individuals in SMEs and born globals have developed during prior employment to their firm's internationalisation behaviour and knowledge development in the initial internationalisation phase. I have been able to show how differences in experiential knowledge combinations of key individuals, developed during a pre-firm internationalisation phase, relate to subsequent paths of internationalisation for born global firms. This thesis, therefore, contributes to the research field by showing that if we consider the experiential knowledge that key individuals have developed in a pre-firm internationalisation phase, new insights about SME and born global internationalisation process can be presented. These insights, in turn, present a somewhat different view of born globals compared with the dominant view in existing research.

In article 1, we used the concept of human capital to capture the experience and knowledge of key individuals involved in a born global firm's internationalisation process. The analysis showed that in the initial internationalisation phase of the born global firm, the human capital used by the firm was made up of the founder's experience with the biotechnology industry, experience with the technology upon which the firm was built and experience from working abroad. These experiences had all been developed in the pre-firm internationalisation phase. The analysis also showed that in the firm's initial internationalisation phase, key individuals' human capital was used in the firm's decisions concerning with whom to interact and where these interactions would take place. In this way, the key individuals' experiential knowledge is shown to enhance a born global's development of foreign market knowledge in the initial internationalisation phase.

In article 2, we focused on two kinds of individual-level experiential knowledge, namely, the international and technological knowledge of key individuals. We then showed that born globals differ in their internationalisation behaviour in the initial internationalisation phase, depending on their key individuals' experiential knowledge. Those born globals that are started and initially managed by individuals who possess an experiential knowledge combination consisting of high levels of both technological and international knowledge tend to discover foreign market opportunities within the context of their search activities. These born globals, labelled born industrials, also exploit their foreign market opportunities more rapidly by committing more resources to foreign markets in their initial investments. Those born globals that are founded and initially managed by individuals with an experiential knowledge combination consisting of high

levels of technological knowledge and low levels of international knowledge tend to discover foreign market opportunities in their ongoing foreign market activities. These born globals, labelled born academics, exploit their foreign market opportunities at a more incremental pace. Born academics also demonstrate a more reactive behaviour towards discovering foreign market opportunities in comparison to born industrials, which exhibit a more proactive behaviour in the discovery of opportunities abroad.

The findings in article 2 suggest that born globals founded by key individuals with high levels of both international knowledge and technological knowledge follow a proactive and rapid path in their initial internationalisation process. By contrast, born globals founded by key individuals with high levels of technological knowledge but limited international knowledge follow a more reactive and incremental initial internationalisation path. The findings also provide evidence that some born globals are actually founded by key individuals who lack international business experience. Hence, a founding team with international business experience does not seem to be a necessary condition to become a born global, which has been a dominant view in existing literature (see Madsen and Servais, 1997; McDougall et al., 1994). Moreover, whether born globals are proactive or reactive in terms of their internationalisation behaviour has been a question of debate within born global research. The dominant view in traditional born global literature is that these firms characteristically exhibit proactive behaviour (Oviatt and McDougall, 1994, 1997). More recently, arguments have been presented that these firms are reactive in their internationalisation behaviour (Sharma and Blomstermo, 2003). The findings presented in article 2 provide evidence of both reactive and proactive behaviour amongst born globals. I, therefore, contribute theoretically to the field by demonstrating that the experiential knowledge combinations of key individuals in these firms determine whether these firms are proactive or reactive in their initial internationalisation phase.

An assumption that has dominated the field of born global studies is that the internationalisation process of born globals differs from the internationalisation pattern of large, established multinational corporations (MNCs). This assumption has guided much of the existing research, which has been focused on finding common characteristics of born global firms. Based on these views, few scholars have investigated the differences in characteristics and internationalisation behaviour within the group of born globals. This thesis, therefore, adds to born global literature both theoretically and conceptually by demonstrating differences in internationalisation behaviour within a group of born globals. In addition, I show that creating taxonomies of

born globals based on their key individuals' experiential knowledge combinations can reveal new insights into these firms. The born academics in this thesis demonstrate an internationalisation behaviour that clearly differs from the view of born globals presented in existing research. What is interesting is that the born academics still fit the definition and operationalisation of a born global because these firms are less than 20 years old, were internationalised within three years of founding and generate at least 25% of their total sales from abroad (see Knight et al., 2004). I suggest that the homogeneous perspective of born globals that has dominated the field might have caused us to neglect certain behaviours of these firms in their internationalisation process.

Even though the analysis in article 1 showed that key individuals' experiential knowledge was positively related to the firm's development of foreign market knowledge, the analysis of the born global firm also indicated that there can be risk involved in using an entrepreneur's human capital too extensively in the initial internationalisation phase. Those experiences that key individuals have developed in the pre-firm internationalisation phase are not always useful in the firm's initial internationalisation phase. Article 1 indicated that the key individuals' experiential knowledge not always is positively related to the firm's development of foreign market knowledge. The indications provided in article 1 were developed and given further support in article 3. The findings of article 3 demonstrated that grafted individuals often had experience of managing successful, but often larger, international enterprises in the past. These individuals' experiential knowledge might not be useful for resource-constrained SMEs. If the SME, however, believes that the social capital and experiential knowledge of founding or grafted individuals can result in fast and successful internationalisation in a specific foreign market, the risk of superstitious learning is high. This means that the decision makers in the SME believe they have adequate foreign market knowledge to proceed but actually lack the knowledge necessary for internationalisation. Thus, in these situations, the subjective experience of learning is compelling within the firm, but the connections between action and outcome are misspecified.

*How do SMEs develop foreign market knowledge from their key individuals' personal networks of relationships in their initial internationalisation phase?*

Existing literature on SMEs has strongly emphasised that the personal networks of key individuals contribute to the firms' resource access and internationalisation (Andersson and Wictor, 2003; Crick and Jones, 2000;

McDougall et al., 1994). The findings of these studies indirectly demonstrate the usefulness of key individuals' social capital for the SME and the born global firm because social capital refers to both the network and those resources that may be mobilised through that network (Adler and Kwon, 2002; Nahapiet and Ghoshal, 1998). Even though the concept of social capital proves useful in understanding these firms' network usage for resource access, surprisingly few studies have used the concept when exploring the internationalisation process of these firms and their development of foreign market knowledge. Those exceptions that exist (see Chetty and Agndal, 2007; Yli-Renko et al., 2002) have also called for further research into the subject. In addition, Autio (2005) explicitly argues that 'more research is needed on the sources, nature, and effects of international social capital in international new ventures' (p. 13).

One important theoretical contribution of this thesis is the demonstration of a relationship between key individuals' social capital and their firms' development of foreign market knowledge in the internationalisation process. In so doing, I have provided further insights into those personal networks that SMEs and born globals use in their initial and continued internationalisation phases. I have also provided findings about the nature and effects of social capital within internationalising high-tech SMEs and born globals. Article 1 showed that in a born global's initial internationalisation phase, it is the founder's personal network that is the most useful for accessing foreign market knowledge because the firm's business network is still under development. Article 3 expanded on these findings by conducting longitudinal, multiple case studies of 14 high-tech SMEs, using the concept of social capital. In article 3, we divided the 14 firms into three subgroups (academic firms, metamorphic firms and industrial firms) based on differences in their key individuals' personal networks, as seen in the structural dimension of their social capital. An analysis of these three subgroups indicated that their key individuals' personal networks differed based on whether the members are from industry or academia. We could then show that depending on who is included in the personal networks, the structural dimension can have either a positive or negative effect on a firm's acquisition of foreign market knowledge. A lack of industrial connections in an individual's network hinders the company's acquisition of foreign market knowledge. Similarly, the relational dimension provides the firm with foreign market knowledge, and the cognitive dimension contributes to the ease of foreign market knowledge acquisition. These findings provided an enhanced

understanding of the firms' personal networks and how they related to the development of foreign market knowledge for SMEs.

The SMEs and born globals investigated in this thesis all operate in a market that is rapidly changing. Previous studies have shown that in these dynamic environments, challenges related to firms' use of networks for resource access and continued internationalisation exist (Coviello, 2006; Crick and Spence, 2005; Jones, 1999). This thesis has provided further insight into those challenges. In article 1, we demonstrated that the personal network of the founder could no longer provide the firm with the knowledge needed for initiating new foreign customer relationships in its continued internationalisation. In article 3, we developed these findings and demonstrated that in a dynamic, rapidly changing market in which biotech SMEs operate, the studied high-tech SMEs often encountered a situation where existing social capital could not provide the foreign market knowledge needed to continue internationalisation. Depending on the firm's ability to understand when existing social capital is useful and when it needs to find and change to new, more useful social capital, internationalisation is more or less successful. If an SME does not realise the need to expand its social capital to those counterparts that can provide the firm with necessary foreign market knowledge, the firm's internationalisation is hindered. Thus, the findings highlight that social capital that is useful for the firm in its initial internationalisation phase might not be useful when the firm enters the continued internationalisation phase.

One means of finding new social capital involved using grafting to gain access to new personal networks and foreign market knowledge. As described under research question 1, using grafting to access new social capital and foreign market knowledge was related to a risk of superstitious learning in the investigated SMEs. According to the findings of article 3, using grafting to access new social capital requires the integration of grafted individuals' social capital with the SME's social capital. We find that the development of social capital in relation to the specific and often rapidly changing market conditions in which biotech SMEs operate is indispensable for development of foreign market knowledge. Consequently, grafted individuals' social capital needs to be adapted and incorporated into an SME's social capital, including their resources and networks of specific customers and partners in foreign markets, to yield results.

The analysis presented in article 3 also contributed to the born global literature by discussing how the use of social capital was related to the speed of internationalisation. Article 3 showed that an SME's use of its key individuals' social capital for access to resources can contribute to rapid

internationalisation; however, the most rapid internationalisation is not necessarily the most successful. We make an important theoretical contribution to born global literature by showing that a rapid internationalisation can hamper the possibilities for a firm to make cause and effect analyses about what can go wrong during foreign operations. A rapid internationalisation, facilitated by the use of key individuals' social capital, can thus be an impediment to the firm's acquisition of foreign market knowledge. We showed that those SMEs that started their internationalisation with foreign market knowledge and large amounts of venture capital, acquired from the key individuals' social capital, could expand rapidly in several foreign markets with high commitment modes. At the same time, the pressure from venture capitalists and owners to generate profits rapidly provided the firms' management teams with neither leverage nor time. Thus, even though these firms entered their initial internationalisation phase with useful social capital, the rapid resource commitments made by these firms in foreign markets made it more difficult for them to develop necessary foreign market knowledge. These problems in turn led to difficulties in developing these firms' operations in the continued internationalisation phase. The findings presented above contribute important knowledge to the discussion about the speed of internationalisation within SME and born global literature by highlighting that a rapid internationalisation is not directly related to a rapid development of foreign market knowledge.

*How do SMEs develop foreign market knowledge from their business network of relationships in their continued internationalisation phase?*

Both SME and born global studies have shown that firms' business network of relationships are important for their development of foreign market knowledge. As mentioned in the review of born global literature, born global studies have, compared with studies of other SMEs, paid less attention to how these firms use business relationships during their internationalisation process. One possible explanation for this research gap could be the lack of born global research that has focused on these firms' continued internationalisation phase. This thesis makes an important theoretical contribution to SME and, in particular, born global literature by exploring these firms' continued internationalisation phase and their activities related to using business network relationships to develop foreign market knowledge. This contribution is important because it extends the theoretical perspective on born globals and discusses those key concepts used to describe born globals from a new perspective.

Article 4 described how a high-tech SME acquires foreign market knowledge in its interaction with existing and new customers within a foreign market in the initial and continued internationalisation phases. The case study investigated an SME that has relatively limited interaction with its existing foreign customers. The interaction is not frequent and is mostly managed via email or by telephone. Moreover, the firm's interaction with existing foreign customers is to a great extent related to whether or not those customers have questions about the product. Thus, in those customer relationships where customers have no further questions when starting to use their products, there is limited further interaction. In those relationships where foreign customers have more questions and are in need of support, the interaction between the high-tech SME and the foreign customer becomes intensified. As a consequence, the high-tech SME acquires more specific knowledge about these customers' needs and demands as compared with those customers that are not in need of any further help or support.

Article 5 provided further understanding into SMEs' development of foreign market knowledge in their business relationships by focusing on born globals and which internationalisation modes these firms use in their initial and continued internationalisation phases. In this article, we also focused on foreign customer knowledge as one type of foreign market knowledge. If the case study in article 4 demonstrated one pattern in which a high-tech SME interacts within its foreign customer relationships, article 5 demonstrated three broad patterns of internationalisation behaviour (i.e., low committers, incremental committers and high committers). We showed that the speed at which resources are committed to foreign market operations varied greatly amongst these three groups of born globals. High committers make substantial resource commitments to foreign markets in their initial internationalisation phase; however, we found evidence of a decrease in resource commitments in their continued internationalisation phase. The low committers, by contrast, have not made any significant resource commitments during their continued internationalisation. The incremental committers incrementally increased their resource commitments during initial and continued internationalisation.

The differences amongst the three groups of born globals in terms of resources committed to foreign markets relate to the differences in their use of business network relationships for knowledge development. The low committers' limited interaction with their foreign customers made it more difficult for the firms to develop foreign customer knowledge. The incremental committers did not interact directly with their foreign customers, because foreign distributors managed the customer relationships. The incremental

committees though increased their possibilities of developing foreign customer knowledge by intensifying their relationships with foreign business partners in the continued internationalisation phase. The high committees are those born globals that used such internationalisation modes that enable frequent interaction with foreign customers already in the initial internationalisation phase, which should facilitate their development of foreign customer knowledge.

Although article 5 showed that differences in internationalisation modes used by different groups of born globals relate to differences in their use of business networks for developing foreign customer knowledge, the results did not clearly indicate that any one group of firms is more internationally successful than the others. Article 5, however, contributes important findings to born global literature by showing that a rapid increase in resource commitments during the initial internationalisation phase does not necessarily result in a rapid continued internationalisation phase. These results add to the findings presented in article 3 regarding the speed of internationalisation. Article 3 showed that key individuals' social capital could contribute to rapid internationalisation, but the most rapid internationalisation was not the most successful. We showed that rapid resource commitments to foreign market operations made it more difficult to develop necessary foreign market knowledge and develop operations in the continued internationalisation phase. A rapid pace of internationalisation is one of the key concepts used when describing born globals and their internationalisation behaviour. The findings in article 5 contribute both theoretically and conceptually to research on born globals, by showing that to understand the speed of internationalisation amongst born globals, it is necessary to include these firms' continued internationalisation phase in the analysis. Focusing on the initial internationalisation phase can provide only a limited understanding of born global firms and their internationalisation behaviour.

Both articles 1 and 2 demonstrated that key individuals in born globals have technological experiential knowledge that was used in these firms' initial internationalisation phase and was related to these firms' development of foreign market knowledge. Article 6 developed the understanding of this technological knowledge, using the firm as the unit of analysis and focusing on the firm's activities related to using its business network relationships for knowledge development. By using the concept of knowledge intensity, the quantitative analysis showed that an SME's knowledge intensity has a positive effect on the firm's development of specific customer knowledge. These results suggest that the knowledge intensity of an SME enhances the firm's

ability to develop new knowledge in its relationships with a specific foreign customer. In addition, the results indicate that knowledge intensity can enhance an SME's ability to use the knowledge it developed in previous foreign business relationships. Thus, knowledge intensity also has an indirect positive effect on an SME's development of specific customer knowledge. The study, however, showed that the effects of knowledge intensity on knowledge development differ amongst SMEs, depending on the number of years from inception that they start to operate abroad. One reason for this difference could be that those SMEs that have experienced a long initial internationalisation phase have developed domestic experiential knowledge that impedes their ability to develop foreign market knowledge. SME and born global studies have argued that domestic experience can inhibit, rather than facilitate, these firms' acquisition of foreign market knowledge (Blomstermo et al., 2004b). Thus, for those SMEs that experience a long initial internationalisation phase, their knowledge intensity cannot enhance their ability to use international knowledge for the development of specific customer knowledge in the continued internationalisation phase. The results are the opposite for those SMEs that experience a short initial internationalisation phase. These SMEs find it easier to use international knowledge for developing specific customer knowledge in the continued internationalisation phase. The findings, therefore, indicate that the length of the initial internationalisation phase of an SME influences the effects of the firm's knowledge intensity on its continued internationalisation phase.

In summary, I have shown that a firm's knowledge intensity relates to its development of foreign market knowledge within business network relationships. These findings can also provide further insight into the discussion of why born globals have received considerable attention within high-tech industries. Even though born globals have been acknowledged in a wide spectrum of industries, born globals in different industries and businesses may face different internationalisation conditions. One such condition that characterises those SMEs operating in high-tech industries is their possession of knowledge resources. If those born globals that operate within high-tech industries are better able to develop knowledge intensity within their firms, they have an advantage compared with other firms and less knowledge-intensive industries in developing foreign market knowledge in their business network relationships.

### **Contributions to behavioural internationalisation process theory**

This thesis has used behavioural internationalisation process theory and its view of knowledge development as the theoretical point of departure. To add new perspectives to the knowledge development process described here, business and social network theories have been used, as well as entrepreneurship theory and organisational learning theory. In this section, I draw on the findings presented in the six articles in this thesis to contribute new insights and perspectives to behavioural internationalisation process theory and the knowledge development process.

#### *Knowledge development in the initial internationalisation phase*

One of the criticisms of the Uppsala model has been that the model does not elaborate on how the internationalisation process gets started and that the model, therefore, lacks an explanation of the initial conditions of internationalisation (Andersen, 1993). I have, in this thesis, extended the analysis of firms' internationalisation process to include the pre-firm internationalisation phase. In so doing, the case analyses presented in this thesis have contributed interesting findings about the initial conditions of the internationalisation process.

The born global cases provide examples of an internationalisation process that begins shortly after a firm's inception. The newness of the firm implies that by the time the firm starts operating in a foreign market, routines and procedures are often still limited because they take time to develop. Firm-level knowledge is therefore scarce. The knowledge within the firm is instead mainly stored in the individuals of the firm. Thus, in the initial internationalisation phase of a born global firm, it is the key individuals' experiential knowledge that reduces the firm's uncertainty connected to starting operations abroad and facilitates its discovery of foreign market opportunities. This also means that a born global firm's foreign market activities in the initial internationalisation phase is to a greater extent influenced by the prior knowledge of key individuals than by the firm's knowledge. These conditions differ from those of the Uppsala model. This model assumes that it is the firm's foreign market knowledge that reduces the uncertainty connected to foreign market operations and facilitates the firm's ability to perceive opportunities in foreign markets. However, in comparison to the Uppsala model, the behavioural internationalisation process models presented by Reid (1981) and Cavusgil (1984) paid greater attention to the influence of the decision maker. Similarly, Wiedersheim-Paul et al. (1978) emphasised the importance of the past history and experience of the decision

maker in their studies about firms' pre-export behaviour. Wiedersheim-Paul et al. also argued that the decision maker's perceptions of the uncertainty associated with moving into exporting will influence the firm's pre-export behaviour. Thus, at the end of the 1970s, studies emphasised the importance of key individuals in a firm's initial internationalisation phase. The findings presented in this thesis can go one step beyond these studies because greater attention has been paid to the pre-firm internationalisation phase and the experiential knowledge developed by key individuals in this phase. Consequently, this thesis provides an enhanced understanding of the initial conditions for internationalisation.

In their discussion of internationalisation process theory and the Uppsala model, Sapienza et al. (2006) highlighted the fact that in this theory the history of a firm's actions supersedes the relevance of individuals' previous experiences. The authors, furthermore, proposed that, to some degree, firms can substitute a lack of organisational experience with managerial experience. The findings presented in this thesis support this argument of Sapienza et al. (2006) by demonstrating the benefits of individual-level knowledge for an internationalising firm. The findings, however, have at the same time shown that if key individuals' prior experiential knowledge has been developed from activities that differ substantially from the newly started firm's own operations and market conditions, this experiential knowledge may be less useful to the firm. This problem becomes particularly evident for firms that operate within dynamic markets, where market conditions can change rapidly. Behavioural internationalisation process theory, and the Uppsala model specifically, has, in comparison to the analyses in this thesis, considered experiential knowledge developed within the firm's own foreign market operations. These models have, therefore, not elaborated on the challenges related to using key individuals' experiential knowledge in the knowledge development process of an internationalising firm.

The Uppsala model describes a knowledge development process that is experience based and path dependent. Research that later used the Uppsala model to explore the internationalisation process of firms found support for the experienced-based and path-dependent knowledge development process (Blomstermo et al., 2004a; Eriksson et al., 2000; Madhok, 1997). These findings explain that the conditions at the start of internationalisation are important for the experiential knowledge development that follows. Eriksson et al. (2000) defined path dependence as an incremental process where the pattern of behaviour by a firm is contingent upon and a function of its past international experience (p. 308). Because the Uppsala model lacks an

explanation of the initial conditions of internationalisation and focuses on firms' internationalisation once the process has started, it is reasonable to assume that the model might say more about knowledge development in firms' continued internationalisation phase than in their initial internationalisation phase. This thesis has demonstrated that born globals' knowledge development in the initial internationalisation phase is experience based and path dependent because the experiential knowledge of key individuals influences the firm's development of foreign market knowledge. By extending the analysis to a pre-firm internationalisation phase, however, I can show that differences in individual knowledge combinations influence what kinds of foreign market knowledge are developed in these firms' initial and continued internationalisation phases. Thus, the experiential knowledge developed by key individuals in a pre-firm internationalisation phase can determine the future paths of firms' internationalisation.

#### *Knowledge development in the continued internationalisation phase*

This thesis has demonstrated that key individuals' technological experiential knowledge and a firm's knowledge intensity relate to the development of foreign market knowledge in the firm. The findings suggest that the extent to which a firm's technological knowledge resources are used in its activities and outputs has important consequences for its ability to internationalise. The knowledge intensity of a firm's resources is an issue that behavioural internationalisation process theory has not further elaborated. This theory has focused on knowledge about foreign markets and institutions, and even though elements of technological knowledge are implicitly included in the terminology, it has not been emphasised or elaborated further. This thesis has highlighted the importance of giving the knowledge intensity of a firm more attention within behavioural internationalisation process theory.

By acknowledging the initial internationalisation phase in SMEs' internationalisation process and describing these firms' development of foreign market knowledge in this phase, this thesis has demonstrated that a rapid initial internationalisation phase can make it more challenging for a firm to develop its operations in the continued internationalisation phase. In article 3, we concluded that those SMEs that experienced an incremental initial internationalisation phase, fostering an incremental development of foreign market knowledge, were the most successful. This thesis has, therefore, provided further support for the incremental nature of firms' knowledge development as presented and emphasised in behavioural internationalisation process theory. Based on the findings presented in this thesis, I argue that an

incremental knowledge development, as opposed to a rapid knowledge development, makes it easier for a firm to develop its operations and succeed in its continued internationalisation phase.

### **FUTURE RESEARCH**

This thesis has used a longitudinal perspective in examining the internationalisation process of born globals and SMEs. The findings presented have been developed by acknowledging a pre-firm internationalisation phase and following the studied firms in both their initial and continued internationalisation phases. Future research should continue to adopt a longitudinal process perspective because such research is still underexplored in the field. Coviello and Jones (2004) described international entrepreneurship research as static because existing research has focused more on behaviour at a given point in time than on processes over time. By showing that new insights into SME and born global internationalisation and knowledge development can be gained by adopting a longitudinal process perspective, this thesis has pointed out an important direction for future research.

The findings of this thesis have highlighted that viewing born global firms as a homogeneous group of firms, which has been the dominant view in the field, might have caused us to neglect certain behaviours of these firms in their internationalisation process. By acknowledging born globals as a heterogeneous group of firms, I have demonstrated the differences in internationalisation behaviour within this group of firms. Future research should continue to investigate differences amongst born globals, which in turn can contribute to resolving controversies in the field regarding the born global firm and its internationalisation process. In this thesis, we classified born globals in two groups, depending on the individual knowledge combinations of their key individuals. The taxonomy of born academics and born industrials was developed. The findings showed that born academics are a group of born globals that to a great extent have been neglected in existing born global literature. By demonstrating the existence of born academics and their internationalisation behaviour, the findings of this thesis show that future research needs to broaden the perspective on born globals. Future research should, moreover, examine how different kinds of experiential knowledge combinations of key individuals relate to the future paths of the firm. It would be interesting to add performance measures to the analysis and specifically examine eventual differences in performance between born academics and born industrials.

An implicit assumption in existing born global research is that a rapid pace of internationalisation is important for the international success of the firm (Crick and Spence, 2005; Knight et al., 2004). The findings of this thesis have provided evidence that a rapid internationalisation makes it more difficult for a firm to develop foreign market knowledge. Future research should explicitly examine the relationship between the speed of internationalisation and the international success of the firm, by adding performance measures to the analysis. Quantitative research could provide an enhanced understanding of these questions. Such research should, however, still view the speed of internationalisation as a longitudinal issue and not limit the study to a phase close to firms' initial activities in internationalisation. In relation to the question of speed of internationalisation, this thesis has also pointed to the need for more studies that examine in greater depth those challenges that are connected to using personal networks and social capital for knowledge development in the internationalisation process. In so doing, this thesis calls for more research on how born globals and non-born globals differ in these challenges.

This thesis has pointed out the shortcomings of behavioural internationalisation process theory and the Uppsala model in terms of their narrow scope of the internationalisation process. To extend the empirical scope, this thesis has included a pre-firm internationalisation phase and opened up the analyses to include the influence from individual-level knowledge. The conclusions made in the six articles, however, still give support to a knowledge development process that is experienced based, incremental and path dependent. The studies presented in this thesis, therefore, support the usefulness of behavioural internationalisation process theory and the Uppsala model in understanding and explaining the internationalisation process of SMEs and born globals. The criticism of behavioural internationalisation process theory and the Uppsala model has been strong within born global literature. The dominant arguments suggest that this theory cannot explain born globals' internationalisation (e.g., Knight and Cavusgil, 1996; McDougall et al., 1994). Based on the findings in this thesis, I suggest that future research should to a greater extent use and develop behavioural internationalisation process theory and the knowledge-based view of firms' internationalisation. I believe that future research stands much to gain from viewing behavioural internationalisation process theory and born global literature as complementary.

## **MANAGERIAL IMPLICATIONS**

An increasing number of small and medium-sized enterprises have expanded their businesses into foreign markets during the past decade and a half. As globalisation facilitates trade across national boundaries, more SMEs come to realise that their markets have changed. In a situation where customers, competitors and partners can be found to a greater extent in foreign markets than in domestic markets, the firm's operations must expand internationally for the firm to survive. Even though developments in information and transportation technology have made it easier for a small firm to start conducting business with foreign counterparts, foreign market operations are often regarded as the most difficult elements in a company's expansion. The challenges connected to doing business abroad are particularly evident for a small firm with limited resources and a lack of experience with foreign market operations. The findings presented in this thesis have a number of implications for managers in small and medium-sized enterprises. The implications are primarily aimed at managers of small and medium-sized firms, but they can also be useful for those organisations and institutions that are involved in the international expansion of small and medium-sized firms and shall support this process.

### **Match the experiences of the employees**

The experiences that the employees in a firm have developed from previous employment are an important source of knowledge for a firm undergoing international expansion. This is particularly evident for a firm that is newly started and yet has not accumulated any substantial experience about how to conduct business abroad. As a manager of a newly started firm, you should develop knowledge about your employees' prior experiences. You should be aware of your employees' experiences of operating in specific foreign countries, as well as their existing personal contacts in this or any other foreign country. Your knowledge about the employees' prior experiences is important because they can provide crucial help in the critical decisions that must be made in the initial phase of your firm's international expansion. These decisions often concern questions about which market to enter, with which business partners to cooperate and how to organise the company's foreign operations.

Different employee experiences have different outcomes for your firm. An advantage for your firm is, therefore, to have employees with different experiences. It is thus important that your firm select new employees that complement the experiences of existing employees. As a manager of a firm,

you need to find a heterogeneous mixture of experiences that can help the firm in critical decisions regarding international expansion. Moreover, all experiences do not directly have positive outcomes for your firm. For example, an individual who has experience in developing a large firm's successful foreign activities can have a limited ability to support the successful international expansion of a newly started, small firm. In addition, if the market conditions within which this large firm operated differ substantially from those of the newly started, small firm, these experiences that proved successful in the past can be less useful in the current situation. To manage these challenges, your firm must put forth a great deal of effort to integrate the individual knowledge of employees with the specific conditions of the firm. These efforts include tailoring and adapting individual knowledge to your firm's current situation.

#### **Know your network and how to use it**

As your company develops its relationships with foreign customers, distributors and partners, it establishes its business network in foreign markets. The activities that your firm undertakes within these business network relationships will give you an understanding of new opportunities as well as potential problems in your firm's international expansion. The problems and opportunities identified provide you with important knowledge of how to plan your company's continued expansion abroad.

For a newly started firm that starts to operate abroad, the number of business relationships with foreign customers and partners can still be scarce. The ability to identify new opportunities from the business network relationships is, therefore, limited. The solution to such a situation is naturally to find other means of accessing new knowledge and new opportunities to expand operations in foreign markets. One such means is to use those personal network relationships that the employees in your firm often have developed. Consider these personal networks as a resource for the firm because these networks can provide your firm with new knowledge about where potential foreign customers, distributors or partners are found and how to come in contact with them. Thus, personal networks can enhance your firm's ability to discover opportunities for business in those foreign markets.

Small and medium-sized firms that operate within high-tech markets, such as the biotechnology market, often face rapidly changing market conditions. In a dynamic market, those personal networks that were once useful to the firm can suddenly become less useful in managing the firm's current activities in a foreign market. As a manager, you must be attentive to

those situations where existing personal networks can no longer support your firm in crucial decisions and activities in foreign markets. If you do not realise when existing personal networks become less useful, you can risk losing several business opportunities abroad, which hinders the firm's continued international expansion.

**The most rapid international expansion is not the most successful**

A trend that has been identified amongst small and medium-sized firms all around the world is that an increasing number of these firms undertake a more rapid international expansion. Within the first three years of establishment, firms have entered several foreign markets, opened subsidiaries in foreign markets and, thus, invested a large amount of resources in the firm's foreign operations. The managerial implications described above have pointed out that knowing how to use the prior experiences of employees and the personal networks these employees have developed can enable your firm to expand its operations into foreign markets more rapidly. However, a rapid international expansion can also make it more difficult to succeed.

To understand when managers' prior experiences are useful or not, and when existing personal networks must be developed, your firm must devote time to analyse the firm's activities abroad and the decisions made. Such an analysis should include questions about what decisions and activities have been correct, what have been incorrect and how existing experiences influenced the firm's decisions and activities abroad. Time and effort is needed for your firm to learn to use the employees' experiences and how to use personal and business networks. Therefore, a rapid international expansion makes it more difficult to perceive what knowledge resources are needed and how the firm should use and develop its network to succeed. In the long run, a rapid international expansion can make it more difficult for a firm to succeed in its foreign market operations. This implication is of particular importance for those firms that operate within rapidly growing industries that require a global presence. This implication is also of importance for those organisations and institutions, and in particular those venture capital firms, that cooperate with small and medium-sized firms. If these parties push too much for a rapid international expansion of the firm, the small firm might not have the chance to acquire necessary knowledge about its foreign market operations. Ultimately, such a situation leads to bad performance.

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## Appendix 1

### Survey – Internationalisation in Business Networks

Businesses often think of entering an international market as difficult. Problems concerning differing rules, the ability to evaluate other companies and cultural differences can become insurmountable obstacles. The ability to utilise knowledge based on previous experiences and to harness the company's network of various business contacts to increase knowledge has often proved key in success abroad. Nevertheless, few studies have been carried out into how companies acquire, transfer and harness knowledge in international business networks. We would therefore like to examine how the content of various business contacts and new advances in IT affect companies' ability to acquire, transfer and harness knowledge, and how this in turn influences companies' development. We need your help to be able to answer these questions and would therefore like to ask you to please complete this survey.

The results will be used for education, publications in international journals, books on internationalisation in networks and further dissemination to you, the practitioners with international operations. Preliminary results can be viewed on our website: [www.hhs.se/inet](http://www.hhs.se/inet). We will also arrange a conference for those who complete the survey. The conference will be held at the Stockholm School of Economics in 2009 where we will be presenting the results and holding workshops based on different industrial sectors. The survey is being sent to small and medium-sized enterprises with significant international operations. It is important that you complete the whole survey to enable us to carry out meaningful analyses of the material. **All answers will be treated in confidence.** If you have any questions, please contact Jukka Hohenthal or Emilia Rovira.

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Your name and position in the company (job title)

Name \_\_\_\_\_ Job title \_\_\_\_\_

Are you interested in taking part in a conference on these issues Yes  No

**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		
	1	2	3	4	5	6	7
We depend on our five largest suppliers for our product/service development							
We depend on our five largest customers for our product/service development							
Our customers depend on us for their product/service development							
Our suppliers depend on us for their product/service development							

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 are 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 characterised 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
The business partner is:	-joint problem-solving	1	2	3	4	5	6	7
	-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

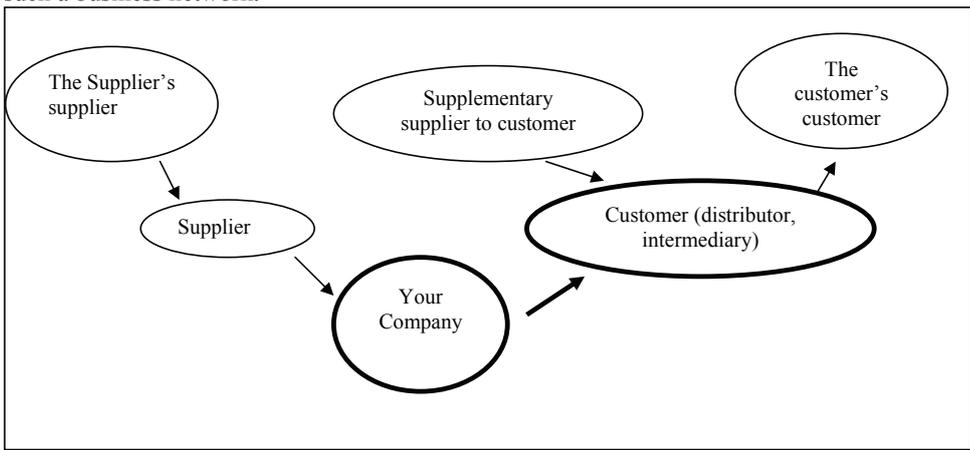
		Not at all				Completely		
The product/service you sell is:	-imitable	1	2	3	4	5	6	7
	-adaptable	1	2	3	4	5	6	7
	-well-documented	1	2	3	4	5	6	7

		Not at all				Completely		
		1	2	3	4	5	6	7
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	<input type="checkbox"/>							
-phone	<input type="checkbox"/>							
-Internet	<input type="checkbox"/>							
-e-mail	<input type="checkbox"/>							
-intranet	<input type="checkbox"/>							
-video conferencing	<input type="checkbox"/>							

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.

<b>Local customer's customer</b>		Not at all							Completely						
On the foreign market, how dependent is the chosen business contact on your most important local customer's customer's	-product	1	2	3	4	5	6	7	1	2	3	4	5	6	7
	-research and development	1	2	3	4	5	6	7	1	2	3	4	5	6	7
	-willingness to collaborate	1	2	3	4	5	6	7	1	2	3	4	5	6	7
	-willingness to adapt	1	2	3	4	5	6	7	1	2	3	4	5	6	7
	-joint procedures	1	2	3	4	5	6	7	1	2	3	4	5	6	7
	-knowledge	1	2	3	4	5	6	7	1	2	3	4	5	6	7
	-modernity, original ideas, contribution to new business opportunities	1	2	3	4	5	6	7	1	2	3	4	5	6	7
-social relations	1	2	3	4	5	6	7	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	Sever al	1	Sever al	1	Sever al								
	-personal meetings	<input type="checkbox"/>													
	-phone	<input type="checkbox"/>													
	-Internet	<input type="checkbox"/>													
	-e-mail	<input type="checkbox"/>													
	-intranet	<input type="checkbox"/>													
-video conferencing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							

<b>Local customer's supplier of supplementary products and services</b>		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 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 supplier of supplementary products and services via:	Daily	A week		A month		A quarter		No contact
		1	Several	1	Several	1	Several	
-personal meetings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-phone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-Internet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-e-mail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-intranet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-video conferencing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>Local supplier</b>		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	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-phone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-Internet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-e-mail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-intranet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

-video conferencing	<input type="checkbox"/>								
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<b>Local supplier's supplier</b>		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	Sever al	1	Sever al	1	Sever al	
-personal meetings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-phone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-Internet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-e-mail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-intranet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-video conferencing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>Local competitor</b>		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
How many times does your company have contact with this local competitor via:	Daily	A week		A month		A quarter		No contact
		1	Sever al	1	Sever al	1	Sever al	
-personal meetings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-phone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-Internet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-e-mail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>Local consultant, authority, etc.</b>		Not at all		Completely				
On the foreign market, how dependent is the chosen business	-consultant	1	2	3	4	5	6	7
	-authority	1	2	3	4	5	6	7

contact on your most important local consultant or authority etc. on the chosen foreign market	-bank	1	2	3	4	5	6	7
	-industry organisations	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.

<b>Customer</b>		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	Sever al	1	Sever al	1	Sever al	
-personal meetings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-phone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-Internet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-e-mail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-intranet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-video conferencing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>Customer's customer</b>		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's customer via:	Daily	A week		A month		A quarter		No contact
		1	Several	1	Several	1	Several	
-personal meetings	<input type="checkbox"/>							
-phone	<input type="checkbox"/>							
-Internet	<input type="checkbox"/>							
-e-mail	<input type="checkbox"/>							
-intranet	<input type="checkbox"/>							
-video conferencing	<input type="checkbox"/>							

<b>Customer's supplier of supplementary products and services</b>		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	1	2	3	4	5	6	7
	-research and development	1	2	3	4	5	6	7	1	2	3	4	5	6	7
	-willingness to collaborate	1	2	3	4	5	6	7	1	2	3	4	5	6	7
	-willingness to adapt	1	2	3	4	5	6	7	1	2	3	4	5	6	7
	-joint procedures	1	2	3	4	5	6	7	1	2	3	4	5	6	7
	-knowledge	1	2	3	4	5	6	7	1	2	3	4	5	6	7
	-modernity, original ideas, contribution to new business opportunities	1	2	3	4	5	6	7	1	2	3	4	5	6	7
	-social relations	1	2	3	4	5	6	7	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	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
-phone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
-Internet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
-e-mail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
-intranet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
-video conferencing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							

<b>Supplier</b>		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	1	2	3	4	5	6	7
	-research and development	1	2	3	4	5	6	7	1	2	3	4	5	6	7
	-willingness to collaborate	1	2	3	4	5	6	7	1	2	3	4	5	6	7
	-willingness to adapt	1	2	3	4	5	6	7	1	2	3	4	5	6	7
	-joint procedures	1	2	3	4	5	6	7	1	2	3	4	5	6	7
	-knowledge	1	2	3	4	5	6	7	1	2	3	4	5	6	7
	-modernity, original ideas, contribution to new business opportunities	1	2	3	4	5	6	7	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	Sever al	1	Sever al	1	Sever al				
-personal meetings	<input type="checkbox"/>										
-phone	<input type="checkbox"/>										
-Internet	<input type="checkbox"/>										
-e-mail	<input type="checkbox"/>										
-intranet	<input type="checkbox"/>										
-video conferencing	<input type="checkbox"/>										

<b>Supplier's supplier</b>		Not at all				Completely			
To what extent is the chosen business contact dependent on your most important (Swedish or international) 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 supplier's supplier via:	Daily	A week		A month		A quarter		No contact	
		1	Sever al	1	Sever al	1	Sever al		
-personal meetings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-phone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-Internet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-e-mail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-intranet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-video conferencing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

<b>Competitor</b>		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	Daily	A week		A month		A quarter		No	

your company have contact with this competitor via:		1	Sever al	1	Sever al	1	Sever al	contact
-personal meetings	<input type="checkbox"/>							
-phone	<input type="checkbox"/>							
-Internet	<input type="checkbox"/>							
-e-mail	<input type="checkbox"/>							

<b>Consultant, authority, etc.</b>		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 organisations	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 <b>local customers'</b>	-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 <b>local customers' customers'</b>	-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 <b>local</b>	-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

<b>customers' suppliers of supplementary products and services'</b>	-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 <b>local suppliers'</b>	-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
To what extent is the chosen business contact dependent on your previous experiences of <b>local suppliers' suppliers'</b>	-modernity, original ideas, contribution to new business opportunities	1 2 3 4 5 6 7
	-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
To what extent is the chosen business contact dependent on your previous experiences of <b>local suppliers' suppliers'</b>	-modernity, original ideas, contribution to new business opportunities	1 2 3 4 5 6 7
	-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

		Not at all	Completely
To what extent is the chosen business contact dependent on your previous experiences of <b>local competitors'</b>	-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 <b>local</b>	-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 organisations	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 <b>Swedish or international customers'</b>	-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 <b>customers' customers'</b>	-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 <b>customers' suppliers of supplementary products and services'</b>	-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 <b>suppliers'</b>	-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 <b>suppliers' suppliers'</b>	-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 <b>competitors'</b>	-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 Swedish or international	-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 organisations	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



## **PART II: THE ARTICLES**



## **ARTICLE 1**

### **The value of human capital for the networks of born globals**

Sara Melén and Emilia Rovira Nordman

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## The value of human capital for the networks of born globals

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**Abstract:** This study explores how a born global firm uses its network to learn during its internationalisation and how human capital influences this learning process. Within born global research, there exists a discrepancy between scholars who regard personal networks to be the most important for born globals' international growth and those who regard business networks as the most important. Based on a longitudinal in-depth case study of a born global within the Swedish biotech industry, our results show that both forms of networks are important but that a born global firm's use of its network differs at various phases in the firm's internationalisation.

**Keywords:** born global; human capital; personal networks; business networks.

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### 1 Introduction

Small- and Medium-sized Enterprises (SMEs) play a crucial role in strengthening the growth and the financial performance of economies around the world. An increasing number of SMEs are, furthermore, shown to start operating in foreign markets from inception or soon thereafter. Scholars have referred to these firms as 'born globals'

(Knight and Cavusgil, 1996) or International New Ventures (INVs) (Oviatt and McDougall, 1994), and researchers as well as practitioners have recognised the need to improve our understanding of these firms' international growth patterns. In this study, we use the concept of born globals when referring to early and rapidly internationalising SMEs. Influenced by other scholars (Knight and Cavusgil, 1996; Autio *et al.*, 2000), we define a born global as a firm that, from inception, discovers and exploits opportunities in multiple countries.

Even though research during the past decade has contributed important explanations regarding the rapid internationalisation pattern of born globals, an aspect that still is largely overlooked is how the learning processes of these firms function. Learning how to conduct business in foreign markets and how to interact with customers in a specific market are key issues in firms' internationalisation processes, from both a theoretical (Johanson and Vahlne, 1990; Johanson and Vahlne, 2003) and a practical perspective. Commenting on the past decade's research on born globals, Zahra (2005) points out that "given the importance of learning for INVs' successful performance, it is essential to understand what and how these firms learn" (p.25). If born globals experience a more rapid internationalisation process, we have reason to expect that these firms' learning processes are different from those of other firms. The new patterns of internationalisation and learning call for us to rethink existing theories and models within the internationalisation process literature. This study endeavours to contribute to that effort through modifications of existing theories.

In this study, we rely on the existing behavioural internationalisation process theory and integrate this theoretical framework with the network theory and the human capital theory. We believe such a theoretical framework can contribute to the knowledge of how born globals learn during their internationalisation process. The more specific aim of this paper is to explore how a born global uses its network to learn during its internationalisation and how human capital influences this learning process. To investigate these questions, we conducted an in-depth, longitudinal case study of a born global active in the Swedish biotech industry. Since Sweden is a small country with a large knowledge base and where technology and knowledge frequently are created as a result of interaction between companies, institutes and universities (OECD, 2002), biotech born globals are relatively common.

## **2 Theoretical background**

### *2.1 Learning according to the internationalisation process theory*

Based on the behavioural internationalisation process theory, the internationalisation of firms is described as the process of accumulating knowledge of markets and institutions abroad by operating in these markets (Johanson and Vahlne, 1977; Johanson and Vahlne, 1990), thus gaining experiential knowledge. Experiential knowledge about foreign markets is identified as the most critical knowledge for the internationalising firm (Bilkey and Tesar, 1977; Johanson and Vahlne, 1977). Experiential knowledge may help an internationalising firm to identify mistakes that have been made and to take action to correct these mistakes (Blomstermo *et al.*, 2004). Firms' activities in markets and the strategic decisions taken are both the source and the result of experiential knowledge acquisitions, as firms continually apply lessons learned from experience to future activities and future strategic decision making.

The process of acquiring experiential knowledge starts at the individual level. The experiences that the individuals of a firm undergo are later stored in the organisation's routines and practices (Walsh and Ungson, 1991; Cohen and Bacdayan, 1994). The nature of experiential knowledge accumulation implies that it is similar to learning, as organisational learning is "the process within the organization by which knowledge about action-outcome relationships and the effect of the environment on these relationships is developed" (Duncan and Weiss, 1979, p.84).

## 2.2 *Born globals and human capital*

McDougall *et al.* (1994) argue that the existing theory fails to explain the formation of early and rapidly internationalising firms because it focuses on the firm-level analysis of large, mature firms. To understand the born global firm, it is necessary to focus on the individual and to determine who the founders of these firms are. McDougall *et al.* (1994) contributed to this discussion by demonstrating that the founders of these firms are entrepreneurs who possess an unusual constellation of competencies that they have developed from earlier activities, which enable these firms to be international from inception. Similar to McDougall *et al.* (1994), Madsen and Servais (1997) argue that to fully understand the phenomenon of born globals, we must examine the background of the founders of these firms, including their education, experience gained from living abroad, and experience attained from other internationally oriented jobs. Andersson and Victor (2003) found that a majority of the entrepreneurs in the born globals they studied had an academic degree and that all entrepreneurs had extensive international experience that had been acquired in their earlier work experiences as well as in studies abroad. Studies have also shown that it is important for founders to have experience in the particular industry in which their new born globals will operate (Madsen and Servais, 1997; McDougall *et al.*, 2003).

In light of the findings presented in previous studies, we argue that the human capital of born globals is an important aspect to consider in understanding born globals' internationalisation. Human capital is a comprehensive concept that encompasses those intangible resources embodied in the skills and knowledge acquired by an individual (Coleman, 1988) and enables a person to act in new ways (Nahapiet and Ghoshal, 1998). Human capital is traditionally built up from components such as formal education and experience (Davidsson and Honig, 2003).

## 2.3 *The born globals' networks*

Born global studies have indicated that one means for a born global to manage a more rapid internationalisation process is to use the networks for accessing the resources needed (Coviello and Munro, 1997; Yli-Renko *et al.*, 2002). By integrating the behavioural internationalisation theory with the network theory, scholars have even described the internationalisation process of these firms to be a matter of learning through networks (Sharma and Blomstermo, 2003; Saarenketo *et al.*, 2004), which implies that firms' current activities in foreign markets occur via interactions with network relationships (Johanson and Vahlne, 1990).

Previous studies about born globals indicated that the personal networks that are developed by founders and managers prior to the start of the firm are important for the firm's rapid internationalisation (Madsen and Servais, 1997; Andersson and Wictor, 2003; Sharma and Blomstermo, 2003). McDougall *et al.* (1994) found that INVs were started by entrepreneurs who had developed a worldwide network, comprising highly successful individuals, from earlier activities. These networks were characterised by personal relationships, as opposed to business relationships. In addition to providing advice, these personal contacts often helped the newly started firm in identifying opportunities. Andersson and Wictor (2003) reported similar findings, and they also claimed that the majority of the literature concerning networks focuses on networking that occurs in more mature firms, as well as on the processes, routines and systems that are present at the company level. However, born globals often lack processes, routines and systems because of their newness. Therefore, to understand how born globals function, it seems more appropriate to focus on their personal networks. In contrast to these findings, Coviello (2006) found that economic relationships are the most instrumental in determining born globals' international growth, which was evident in the very early stages of the investigated firms' life cycles, as well as throughout the following stages of their international growth. Somewhat similar findings were also presented by Coviello and Munro in 1997, who found that the rapid internationalisation of newly started, small software firms was often initiated by their relationship with a large business partner.

We conclude that previous studies indicate that both personal and business networks are important in born globals. Our view is supported by Rialp *et al.* (2005), who concluded that the use of both personal and business networks engenders and facilitates early internationalisation among born global firms.

To analyse how born globals use their networks to learn during their internationalisation process, we distinguish between business and personal networks. We define personal networks as those consisting of network relationships that have been created by, and related to, entrepreneurs personally. Personal networks have been created by entrepreneurs at various stages of their careers and retained over the years (Hallén, 1992). In line with the business network approach (Johanson and Mattsson, 1988), we define business networks as those consisting of relationships with customers, distributors, suppliers, competitors and government. Business relationships are basically created by, and related to, the company of the person disposing of the contacts, and can be transferred to other individuals. In this study, we chose to focus on the customer relationships present in the business networks of born globals.

#### *2.4 Born globals, networks and grafting*

We acknowledge that studies have provided indications of the challenges that newly started, small high-tech firms have in terms of changing their networks during the internationalisation process (Jones, 1999). Crick and Spence (2005) demonstrated that in the early phase of small, high-tech firms' internationalisation, existing networks consisted of the previously developed relationships of owners and managers. These networks can, however, lose their usefulness in a certain phase of firms' internationalisation. To obtain access to critical resources and enter new markets, the firms in their study had to develop new networks. One means to do so was to recruit executives and new employees with the necessary experience and knowledge. These new recruitments also provided

firms with new network relationships that were considered useful. The Crick and Spence (2005) study indicates that grafting new members who possessed the needed knowledge helped manage the use of networks for resource access during born globals' internationalisation. Grafting can be a faster method of acquiring complex forms of knowledge compared with acquiring this knowledge through experience. Huber (1991, p.97) described learning through grafting as learning through acquiring and grafting of new members who possess knowledge not previously available within the organisation. With the exception of an article by Bengtsson (2004), few studies have to our knowledge focused on born globals' learning through grafting.

### **3 The exploratory study: research method**

To explore how born globals use their networks to learn during their internationalisation and how human capital influences this learning process, we used a qualitative case-study approach. This type of approach is generally preferred when 'how' or 'why' questions are posed (Yin, 2003) and when the aim is to build new theory from data (Eisenhardt, 1989).

In this study, we focused on a company that is active in the Swedish biotech industry, a highly internationalised industry characterised by rapid change and growth. With 230 biotech firms, Sweden has the largest share of biotech companies per capita in the world (SwedenBIO, 2005), and most of these companies are small enterprises. We selected our case firm (which we will call Alpha for the purposes of this study) from 'The Swedish Biotech Industry Guide', a database that lists and offers information about Swedish biotech firms. Alpha was selected from a larger group of 14 firms in the biotech business that we have followed since 2003. We decided to conduct a single case study of Alpha because we wanted to perform an in-depth analysis of a typical case. A group analysis of the 14 biotech SMEs revealed that Alpha is a representative case to use when investigating born globals. According to Yin (2003), it is suitable to use a representative or typical case, chosen from a larger group of firms, when the objective is to capture the circumstances of an everyday or commonplace situation. The lessons learned from these single cases can, in this manner, be used to say something about the experiences of the average organisation in the same field.

To find suitable cases for our study, we chose to focus on the large biotech cluster in Uppsala. This concentration of a group of firms in a single location facilitated data collection by providing continuous access to the founders and managers within biotech SMEs. To be included in this study, potential case firms also had to have their founders still working at their firms, had to conduct their own research and development (R&D), and must have at least one product sold in a foreign (*i.e.*, non-Swedish) market. These criteria were chosen so that we could find internationally active firms capable of managing the production chain themselves: from R&D to the interaction with foreign actors. Because the founders of small entrepreneurial enterprises have often been shown to play important roles in the firms' first years of internationalisation, we also wanted the founders to be still active in the firms.

These criteria limited the number of potential cases dramatically. We chose to contact qualified candidate case firms randomly. We started out by contacting one firm by telephone and then gradually continued to add firms in the same manner. All of the firms that we subsequently contacted agreed to participate in the study.

Data collection was stopped after 14 companies had been visited. Because the interviews conducted at the last few firms provided us with narratives similar to those we had previously heard, the theoretical saturation point seemed to have been reached.

Table 1 describes Alpha in 2003 when the study was started. Table 1 also shows that Alpha fits into the commonly used operationalisation model that views born globals “as firms less than 20 years old that internationalized on average within three years of founding and generate at least 25 percent of total sales from abroad” (Knight *et al.*, 2004, p.649).

**Table 1** Alpha in 2003, at the beginning of the study

Founding year	1998
Number of employees	29
Turnover (thousands of USD)	2012
Net profit/loss (thousands of USD)	-2725
Year of first foreign sale	1999
Export percentage (compared to total sales)	70% (within 6 years after foundation)
Foreign market entries since foundation (regions of the world)	Europe and North America
Internationalisation modes	Develops products in cooperation with customers in Finland, Norway, Great Britain, the USA and Germany

### 3.1 Data collection

In this study, we considered Alpha to be the unit of analysis. To investigate Alpha’s international development, we chose to conduct interviews with the founder as well as with the managers who had been most responsible for managing the firm’s internationalisation process. Between January 2003 and June 2005, we conducted face-to-face interviews with these employees at Alpha. We have, however, continued to follow the development of Alpha by collecting secondary data and by conducting brief phone interviews with some of the respondents. We decided to study Alpha in a longitudinal manner to determine how certain conditions changed over time. Eleven face-to-face, semistructured interviews were conducted with the Alpha staff. The interview times ranged from 40 to 160 min, with an average duration of around 120 min.

A major strength of a case-study data collection is the opportunity to use different sources of evidence (Creswell, 2003; Yin, 2003). Multiple sources of evidence are also particularly important in terms of strengthening the construct validity. In addition to conducting semistructured interviews with different employees, we used archival documentation from Alpha, as well as information about the firm collected from databases, such as articles and annual reports. We also established evidence chains and found that the documentary evidence corroborated the stories provided by the different employees. Another test was to receive feedback on drafts of the cases from the interviewees.

To strengthen the external validity of our case study, we followed an experiment-like replication logic when collecting the data (Yin, 2003). Even though our interviews were semistructured, the respondents were given the opportunity to speak freely and to elaborate on their answers. To ensure that the same topics were covered at all of the interviews, we utilised an interview guide.

To increase the reliability of the study, we kept a detailed account of our activities in a research protocol, which included transcripts of the audiotape recordings from all of the interviews, transcripts of our field notes and observations, and transcripts of the secondary data. Because the goal of reliability is to minimise errors and biases in a study, we, moreover, enlisted two researchers to conduct the interviews at the investigated firms.

### 3.2 Analytical approach

Alpha, the case firm under investigation in this study, is a typical Swedish born global. To investigate its internationalisation process, we chose to follow Alpha longitudinally during the years 2003–2007. In doing so, we aimed to explore how certain conditions in Alpha's environment changed over time and how these changes influenced Alpha's learning. To carry out our objective, we used chronology analysis, which is a special form of time-series analysis. Longitudinal case studies are particularly suitable for this kind of analysis because they allow one to trace events over time and explore the causal effects of these events (Yin, 2003). In our longitudinal study of Alpha, we chose to focus on three stages in Alpha's internationalisation: the international establishment phase between 1999 and 2002, the reorganisation phase between 2002 and 2003, and the new market phase from 2004 to the present.

## 4 The learning and internationalisation of Alpha

When this study was started in 2003, Alpha was a firm that specialised in manufacturing microcomponents in plastic. Microcomponents are traditionally made from silicon, a material that is much more expensive to utilise than plastic. Alpha is, furthermore, able to manufacture a plastic component in a fraction of the time that it takes to manufacture a similar microcomponent in the traditional way. Alpha's production technology, with a large series of products that can be manufactured cheaply, was believed from the beginning to be well suited for one-time products in biotechnology or electronics. Even though Alpha can manufacture large quantities of products, different product applications must be developed in close and long-term collaboration with the customers/end users before the manufacturing phase can begin.

### 4.1 The establishment phase

His (*i.e.*, the founder's) influence on our sales has been heavy. Hitherto, he has generated about 90 percent of our customers. (excerpt from an interview with Alpha's Market and Applications Director, 5 February 2003)

Alpha's Market and Applications (M&A) Director recognises the founder's ability to make potential customers enthusiastic about Alpha's products as one of his greatest strengths in generating new business. The founder started his career at a biotech company in the 1980s. At the beginning of the 1990s, he left this employment and started working at a large international pharmaceutical group instead. Around the turn of the millennium, he thought that the time was right to start the company Alpha, for which he and his boss from the large pharmaceutical group had already started to create a business plan in the mid-1990s.

From 1997 to 2002, Alpha's founder assumed the main responsibility of initiating customer relationships. Because the founder's network in the biotech industry was considerable, he was able to get in contact with the right individuals at potential customer companies. For example, when the founder became interested in a large Finnish company, he contacted individuals in his network to determine if any of them had any connections within the firm who might be interested in doing business with Alpha. From a mutual network connection, he received the names of two people who worked at the company.

From his previous places of employment, the founder had gained experience working with customers both in Germany and the USA. For example, the founder contacted one of his old American contacts for advice about how much the company could ask a new American customer to pay for an offer that Alpha was planning to submit. The American contact and the founder talked about the value for the customer and the cost for Alpha and decided on something that ought to be a good deal for both of them. As a result, the price quotation was twice as much as it would have been without the discussion. The deal was accepted, and both parties were satisfied.

#### *4.1.1 Analysis of the establishment phase*

This case study demonstrates that the founder had a great impact on Alpha's early internationalisation in the establishment phase. From previous job positions, the founder had attained experience with the biotech industry, experience with the technology upon which Alpha is built, and experience from working abroad. We define the founder's experiences and knowledge, acquired from previous job positions, as his human capital. The founder's human capital influences what new knowledge Alpha acquires and his personal network provides him with access to important knowledge that would be hard for him to obtain in any other way. In the establishment phase, Alpha's network was mostly made up of the personal network that the founder had developed during previous job positions. The business network was still under development, and limited significant learning from the business network occurred during this early phase of internationalisation. Learning through grafting was also limited because Alpha's staff members believe that the necessary experiential knowledge about international sales is incorporated in the founder and his personal network.

#### *4.2 The reorganisation phase*

The staff that previously had worked as project leaders came to take the role as account managers after the reorganisation [...] All of the account managers are very knowledgeable about technology, and many of us are PhDs. (excerpt from an interview with one of Alpha's account managers, 8 April 2003)

Five years after Alpha's foundation, the company was divided into two departments, the Technology Department and the M&A Department. Apart from an M&A Director, Alpha's new M&A Department consisted of six account managers who managed the main relationships with existing customers and also worked to generate new customers for the company. One of the major reasons for Alpha's reorganisation in 2003 was the need to enter new markets. By this point, Alpha had emptied out the customers that had been generated from the best personal-network connections of the founder. Instead, the strategic plan was to turn to new customers that were larger than Alpha in new foreign markets.

At the time of the reorganisation, Alpha had also noticed that it needed to improve its customers' rate of repeat orders. During the fall of 2002, Alpha performed a customer analysis, which revealed that Alpha had conducted business with approximately 30 customers within the biotech industry since its inception. Only a few of these customers, however, had turned to Alpha for new projects. One of the explanations for the low ratio of repeat orders was that some of Alpha's customers had gone bankrupt as a consequence of the recession, and for many of the others, times were also hard.

Some of the new account managers acknowledged that they did not have much experience with international sales in comparison with the founder. Furthermore, they did not have the same extensive technological knowledge that the founder possessed. The three account managers all agreed that it was important to possess technical knowledge in order to sell Alpha's products. They did, however, also relate that Alpha's focus on technical selling could be one of the reasons why the company had had problems with initiating business relationships at the right level in potential customers' organisations. The account managers succeeded at awakening the interest of the technical personnel, but failed to reach the economic decision-makers who had the power to make purchasing decisions. At Alpha, it was still the founder who had the most extensive experience in sales and, thus, the broadest knowledge of how to advance to other levels than the purely technical in a potential customer's organisation.

The reorganisation of Alpha took a long time to implement, and in the winter of 2003, the M&A Director related that the company had to start rethinking its new strategy if sales did not increase rapidly during the spring.

#### *4.2.1 Analysis of the reorganisation phase*

In the early phase of Alpha's internationalisation, the firm's operations were dominated by the influence of the founder's human capital and personal networks. The decision to reorganise the firm was a result of what Alpha's staff had learned from their interactions with existing customers. During the reorganisation phase, the six account managers started assuming responsibility for initiating and managing Alpha's customer relationships, which implies that Alpha's internationalisation was now influenced more by the six account managers' human capital and personal networks than by the founder's. Alpha's new M&A Department could be viewed as a result of an internal grafting process because Alpha was now utilising the human capital and personal networks of the account managers in a new way. However, the result of the internal grafting did not live up to the expectations. In comparison with the founder, the account managers' human capital was limited and this influenced their ability to initiate relationships with potential customers and build a strong business network. The account managers' tasks were also made more difficult because of the downturn in the economy.

#### *4.3 The new market phase*

We were not that interested to change because biotechnology was still going so well [...] Before 2002, we had not lost a single submitted offer, but from the year 2002, it was the other way around. (excerpt from an interview with Alpha's founder, June 28, 2005)

The difficult times that Alpha's old customers in the biotech industry had experienced during the recession also forced Alpha to downsize its organisation. When we visited Alpha in the beginning of 2004, only two account managers and the M&A Director remained of the old M&A Department. One of the remaining account managers said that they had actively worked to generate new customers during the past year. Connections with between 75 and 100 companies had been generated, and eventually, these relationships became too much for the account managers to handle. Because of time limitations, they never had the chance to work closely with these companies and analyse their situation thoroughly. In December 2003, the strategy was changed. Instead of trying to sell shorter development phases to a larger number of companies, Alpha would try to initiate longer cooperations with a smaller number of large customers.

Aside from these changes, Alpha's venture capital investors had helped the company to headhunt for an external Chief Executive Officer (CEO), who started working for Alpha at the beginning of 2004. Alpha's new CEO had a background in the diagnostics business, where he had many years of experience working as a sales manager at a multinational company. The new CEO was, furthermore, the first person at Alpha with experience in pure selling functions. The employment of the CEO was also the factor that influenced Alpha's strategic change because he pressed vigorously for this change in strategic orientation.

Before the new CEO started, Alpha's staff did not know much about the market for diagnostics. They had previously been discouraged by the fact that diagnostics was such an inexpensive business. Because every unit is rather cheap, many units have to be produced to generate a profit. Alpha's previous plan had always been to produce expensive units, but this strategy proved to be ineffective. Much of the blame for the ineffectiveness of the previous plan could be attributed to the market failure of many of Alpha's small customers. These firms did not grow at the anticipated rate, and the biotech industry had suffered a downturn worldwide during the past couple of years. However, the founder also acknowledged that Alpha had not done its homework in marketing properly; diagnostics was an important market that had been previously overlooked. In comparison to small biotech firms, it is easier to work with large diagnostic customers because they are all listed on the stock market, and it is easy to attain information about them. To initiate the customer relationships that Alpha now seeks, the company utilises consultants. These consultants help Alpha to get in contact with individuals at high levels in important customer companies and make it possible for Alpha to present its ideas to these individuals.

In 2006, Alpha found success with the development of a quick test for cardiac disease and signed collaborator agreements with several international diagnostic companies. The international launching of Alpha's own diagnostic product will start in 2008, and the firm expects large new investments from the venture capitalists to support the international marketing activities. Alpha has already hired about ten more employees and expects to have a staff of 50 by the end of 2007.

#### 4.3.1 Analysis of the new market phase

The new market phase is characterised by an effort to correct the problems and errors that were identified when dealing with Alpha's existing small, knowledge-intensive customers. Two international consultants provided useful knowledge that helped the employees to come into contact with important companies that were outside Alpha's existing business network. By using grafting to acquire new knowledge and obtain access to new personal and business networks, Alpha's staff members were able to steer the firm's internationalisation in a direction that otherwise would have been impossible because of the firm's lack of knowledge about the diagnostics business. By grafting a new CEO, Alpha also acquired new human capital that came to influence Alpha's internationalisation extensively. Alpha's ability to initiate customer relationships with large diagnostics companies was greatly influenced by the sales experience of the new CEO in the diagnostics business. Table 2 summarises the results of the analysis.

**Table 2** Learning in the internationalisation of Alpha

<i>Alpha's development</i>	<i>Main source of human capital</i>	<i>Personal networks</i>	<i>Business networks</i>	<i>Grafting</i>
Establishment phase	The founder	The founder's personal network is used to learn about business opportunities.	Alpha builds up a business network.	Limited
Reorganisation phase	The account managers	The account managers use their personal networks to initiate new business.	Alpha learns that their customers do not generate enough business.	Internal grafting of the account manager
New market phase	The CEO	The CEO uses his personal network to access knowledge of the diagnostics market.	Alpha extends its business network.	External grafting of a new CEO and two consultants

## 5 Discussion

The purpose of this study was to explore how a born global uses its network to learn during its internationalisation and how human capital influences this learning process. The case study demonstrates that the personal networks of founders and managers often are used to provide born globals with important knowledge, for example, concerning whom to contact in potential customer companies and what price to ask potential customers for. The findings, moreover, contribute to existing research by claiming that the human capital of employees influences born global firms' initial learning processes. It is the human capital that decides what relations a born global uses in its early internationalisation, which in turn may influence the strategic direction of the whole firm. We thus conclude that the human capital in the born global firms will influence the network learning of the firms by affecting the conditions in which learning occurs. This implies that the human capital influences with whom and where interactions and learning take place. To determine the role that human capital plays in born globals' learning,

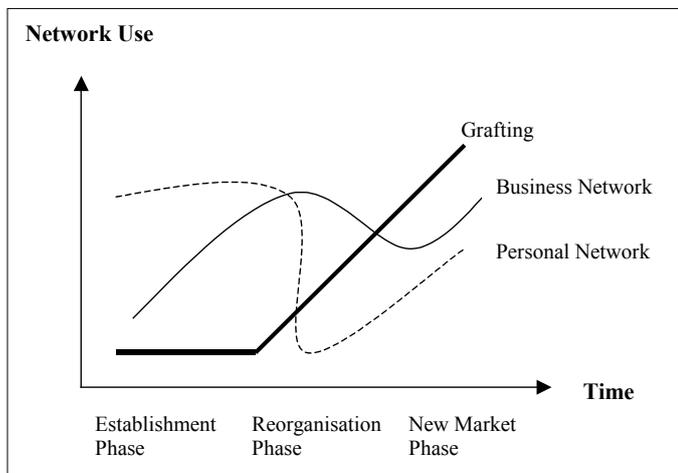
it is, moreover, necessary to extend these studies to the time prior to the born globals' establishment because the human capital often has been developed from an entrepreneur's previous employment and life experiences. Several studies have already emphasised the need to study a born global firm prior to its inception in order to fully understand its internationalisation (Madsen and Servais, 1997; Coviello, 2006). More specifically, studies have called for more born global research investigating the background of the founder (Madsen and Servais, 1997). This study contributes with interesting findings regarding the role of a founder's human capital in the born global firm's learning in its internationalisation. We specifically show that the learning process of a born global firm does not start at the firm's inception but rather at the phase prior to its establishment.

In accordance with Coviello (2006), we acknowledge the importance of considering the network dynamics in a born global's internationalisation process. Within the field of born global research, some scholars have, however, emphasised that it is the personal networks that are the most important for born globals (Andersson and Wictor, 2003), whereas other scholars have claimed that it is the business relationships that are the most important for these firms' international growth (Coviello, 2006). We argue that a born global firm's use of its networks differs at various phases in the firm's internationalisation. To summarise the findings made in the analysis of Alpha, Figure 1 presents a theoretical model showing how the use of networks for acquiring knowledge is changed during a born global's internationalisation. In Alpha's establishment phase, the founder's personal network was used to acquire knowledge of potential foreign-customer relationships, whereas the business network, including foreign-customer relationships, was still under development. Alpha's internationalisation was thus more characterised by learning from personal-network relationships than learning from business-network relationships in this phase. This situation, however, changed when Alpha entered its reorganisation phase, and the founder's personal network no longer could provide the firm with the knowledge needed for initiating new foreign-customer relationships. Alpha also experienced cash flow problems. The learning generated from the use of personal networks and how this influenced Alpha's business network resulted in a declining use of the founder's personal network. Instead, six account managers were grafted internally to focus on initiating new foreign customers to develop Alpha's business network. The new market phase is a result of what was learned from interacting within Alpha's business network. The problems experienced in the reorganisation phase resulted in the use of grafting to acquire the needed knowledge that Alpha lacked. Alpha could now use the knowledge and personal networks of the new CEO and consultants to come into contact with the larger customers they needed.

In analysing Alpha's use of their networks during the internationalisation process, we have not considered performance measures. Despite this, the case study still gives an indication of some negative effects that followed as a result of the founder's extensive usage of human capital and his personal network. In the later phases of Alpha's internationalisation, the founder acknowledges that it was an unsuccessful strategy to focus on small biotech firms. Instead, diagnostics turned out to be an important market that had been overlooked from the start. We argue that the initial focus on small biotech firms was a result of the founder's human capital and personal network, which guided Alpha to initiate customer relationships in the biotech market instead of the diagnostics market. The analysis of Alpha thus emphasises the risks involved in using an entrepreneur's human capital and personal network too extensively. Even though an

entrepreneur has many experiences of previous successful activities, there is no guarantee that this knowledge can help the performance of a new born global. Crick and Spence (2005) showed that born globals face great challenges when using their networks for resource access. Our study supports these results, and we emphasise that these challenges should be given further attention among scholars.

**Figure 1** Alpha's use of networks and grafting during its internationalisation process



Whereas existing born global research, to a large extent, has discussed whether it is the personal-network relationships or the business-network relationships that are the most important for a born global firm, we argue that neither of these kinds of networks is more important than the other. Instead, the most important aspect for a born global firm is to have the ability to learn from existing network relationships what knowledge and networks are needed in different phases of its internationalisation.

## 6 Conclusion

### 6.1 Limitations and suggestions for further research

The data that this study is built on were collected from one Swedish born global. Space limitations made it impossible to include more cases in this analysis. To be able to generalise the findings of this study further to include other business sectors and international markets, multiple case studies are needed.

We have not included performance measures in our analysis of the longitudinal case study. An analysis of the learning processes in relation to performance outcomes could provide additional understanding and explanation of born globals' internationalisation, and future research should therefore include performance measures. In doing so, a quantitative study could be used to provide further explanations of the early and rapid internationalisation of these firms.

Another limitation of this study is that it almost exclusively focuses on customers in the analysis of important business-network relationships. Additional theoretical and empirical work that includes an analysis of other network actors' impact on the learning of internationalising born globals would be useful to further validate the results of this study.

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## ARTICLE 2

### **The impact of different kinds of knowledge for the internationalization process of born globals in the biotech business**

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## The impact of different kinds of knowledge for the internationalization process of Born Globals in the biotech business

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### Abstract

This study explores how different kinds of knowledge of founders and managers at Born Globals are related to the firms' discovery and exploitation of foreign market opportunities. Based on data from eight biotech Born Globals, we dichotomized Born Globals into two subsets: Born Industrials and Born Academics. The study shows that the founders' and managers' different combinations of technological and international knowledge impact the firms' proactive or reactive behavior in discovering foreign market opportunities. The results indicate that different kinds of Born Globals follow different internationalization processes and that Born Globals, therefore, should not be analyzed as a homogenous group, which has been the common perspective in previous research.

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*Keywords:* Born Globals; International entrepreneurship; Technological knowledge; International knowledge

### 1. Introduction

During the last decade, an increasing number of new ventures were shown to start internationalizing from inception or soon thereafter. Concepts such as Born Globals, international new ventures, or global start-ups have been introduced by scholars focusing on the phenomenon of early and rapidly internationalizing firms.<sup>3</sup> Two activities essential to the internationalization

of Born Global firms are the discovery and exploitation of foreign market opportunities (e.g., the discovery of an opportunity to employ an individual who has important network connections in attractive foreign markets). Born Global firms operate in dynamic markets, in which windows of opportunity rapidly open and close. To survive, these firms in particular must be successful in how quickly, efficiently, and holistically they sense and act upon opportunities abroad (Crick & Spence, 2005; Dimitratos & Jones, 2005). In comparison to other firms, Born Globals, thus, face unique challenges when discovering and exploiting foreign market opportunities. The topic of opportunity discovery and exploitation has been identified as one requiring further study (Dimitratos & Jones, 2005; Styles & Seymour, 2006).

Previous studies have shown that one element influencing the internationalization of Born Global firms is the level of international knowledge acquired by founders and managers, often prior to the start-up of the firms (Madsen & Servais, 1997; McDougall, Oviatt, &

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<sup>3</sup> In this study, we use the concept of Born Globals when referring to early and rapidly internationalizing firms. Influenced by other scholars (Autio, Sapienza, & Almeida, 2000; Knight & Cavusgil, 1996; Rennie, 1993), we define a Born Global as a firm that, from inception, discover and exploit opportunities in multiple countries.

Shrader, 2003; McDougall, Shane, & Oviatt, 1994). A founder's or a manager's knowledge of foreign markets is of great importance for Born Global firms, as these firms are new and, therefore, lack an organizational history. For this reason, firm-level knowledge cannot supersede individual-level knowledge (Autio, 2005). A significant number of Born Global firms have been found to operate within high-technology industries, and founders and managers working at these firms have sophisticated technological knowledge (Knight & Cavusgil, 1996, 2005; Madsen & Servais, 1997; Rialp, Rialp, & Knight, 2005; Sharma & Blomstermo, 2003), which has been shown to have an impact on these firms' internationalization. We make a distinction between these two kinds of knowledge, using the terms international knowledge and technological knowledge.

In this study, we integrate arguments from the Austrian School of Entrepreneurship (Hayek, 1945; Kirzner, 1997; Shane, 2000) with aspects of the Uppsala Internationalization Process Model (Johanson & Vahlne, 1977, 1990, 2003, 2006). We find these two schools' views on opportunity discovery to be complementary as both focuses on knowledge as a prerequisite for the discovery of opportunities. Because international knowledge and technological knowledge are shown to be important elements in Born Global research, the integration of these two schools' views is particularly effective, which we believe can shed new light on the phenomenon of Born Globals.

The purpose of this study is to explore how the levels of international and technological knowledge of founders and managers at Born Global firms are related to the firms' discovery and exploitation of foreign market opportunities. In our qualitative, explorative case studies of Swedish biotech firms, we identify similarities and differences in Born Globals' discovery and exploitation processes, and explore why such differences occur. The founders and managers of the investigated firms are those employees who have been responsible for taking strategic initiatives and have been involved in planning, managing, and executing the firms' initial internationalization processes, the phases under scrutiny in this study.

By conducting this study, we attempt to make three contributions to the field of Born Global research. First, a controversial issue within Born Global research is whether these firms are proactive or reactive in terms of their internationalization behavior. Traditional Born Global literature has strongly emphasized the proactive behaviors of these firms (Oviatt & McDougall, 1994, 1997) whereas more recent research has argued that Born Globals are reactive in their internationalization

(Sharma & Blomstermo, 2003). One similarity between the views of the Uppsala School and the Austrian School are that both perceive their respective processes (i.e., the internationalization process and the entrepreneurial discovery) as reactive. By examining the Born Globals' discovery and exploitation processes, we contribute to Born Global theory development by discussing the proactive and/or reactive behaviors of these firms and by clarifying the conflicting arguments surrounding this issue. Second, our study contributes to knowledge-based internationalization literature and the theoretical discussion of Born Globals' internationalization process by analyzing how the speed of internationalization is affected by the levels of technological and international knowledge possessed by these firms' founders and managers. Third, our examination of the Born Global phenomenon revealed a deficiency in existing research, which characterizes Born Globals as a homogenous group of firms. We claim that adopting this type of perspective may lead to a failure to notice certain crucial insights; therefore, these firms should be studied from a heterogeneous perspective.

This paper is structured as follows: The introduction is followed by a literature review of Born Global studies. The theoretical framework of this study is then provided. Next, the methodology of the study is discussed, followed by the presentation and analysis of case study data. The article then offers a discussion of the findings, recommendations for practitioners, and limitations, as well as suggestions for further research.

## 2. Knowledge and the Born Global firm

Born Globals are generally new firms that lack organizational histories. In comparison to established multinational corporations (MNCs), newly formed Born Global firms do not possess those deeply rooted routines, practices, and structures that often characterize long-established businesses. The knowledge found in a Born Global firm is thus stored within the individuals starting the firm rather than in the firm's procedures, norms, rules (March, 1991), and routines (Cohen & Bacdayan, 1994; Nelson & Winter, 1982). Scholars have claimed that firm-level knowledge cannot supersede individual-level knowledge in the Born Global firm (Autio, 2005; McDougall et al., 1994). The lack of established routines, practices, and structures could even be described as an advantage for these firms because they do not need to unlearn established practices, which has been shown to be a difficult task for older and more established firms

(Barkema & Vermeulen, 1998). In this instance, youth confers greater flexibility and agility (Knight, Madsen, & Servais, 2004). Because this study is about Born Global firms, our interest lies in studying individual-level knowledge and, more specifically, the knowledge of founders and managers at Born Globals. We focus on the tacit form of knowledge (i.e., knowledge that has been acquired from experience and depends on the context in which activities are performed). This form of knowledge is non-codified knowledge, which is hard to transfer to others. Based on the work of Penrose (1959) and Johanson and Vahlne (1977) we denote this form of knowledge as experiential knowledge. In this study, we use knowledge, experience, and capability as interchangeable concepts.

### 2.1. *The impact of the individual*

During the last decade, interest in the Born Global phenomenon mushroomed significantly and led to intensive discussions concerning which elements deserve attention in regard to the international development of these firms. One element, upon which a vast number of scholars seem to agree, is that founders and managers play a crucial role in the international development of these firms. In this brief literature review, we focus on this element of Born Globals and, thereby, limit our review to include studies that discuss the roles played by important key employees, namely the founders and managers of these firms.

McDougall et al. (1994) argue that Born Globals can be international from inception because their founders possess an unusual constellation of competences. Other scholars in the field have supported and further elaborated upon this argument (Andersson & Wictor, 2003; Crick & Jones, 2000; Crick & Spence, 2005; Knight & Cavusgil, 1996; Sharma & Blomstermo, 2003). It has, among other things, been demonstrated that founders and managers of Born Global firms have significant international experience prior to the establishment of their firms and that this experience is an important driver for their international development. Studies have also shown that it is important for founders and managers to have experience in the particular industry in which their new Born Global will operate (Madsen & Servais, 1997; McDougall et al., 2003). During prior experiences, these individuals have developed personal networks of customers and contacts, which can be used to acquire business advice and opportunities when starting the new firms (Crick & Jones, 2000; Sharma & Blomstermo, 2003).

Existing research about Born Globals has to a large extent focused on high-technology industries (Rialp et al., 2005) even though Born Globals exist in other industries as well (e.g., McDougall et al., 2003; Moen, 2002). This tendency may occur because the application of sophisticated technology and the development of unique products facilitate and even drive the internationalization of Born Globals. Many Born Globals thus rely on sophisticated technological knowledge (Knight & Cavusgil, 1996, 2005) that often is closely connected to the individuals working at these firms (Madsen & Servais, 1997; Sharma & Blomstermo, 2003). The impact of Born Globals' technological experience has also been studied by researchers who have used terms such as knowledge intensity (Yli-Renko, Autio, & Tonnti, 2002) and technological learning (Zahra, Ireland, & Hitt, 2000). The results of these studies showed that technological knowledge is positively related to both international growth (Yli-Renko et al., 2002) and a higher level of financial performance (Zahra et al., 2000). Previous studies have thus shown that different kinds of knowledge influence the internationalization process of Born Globals. In this study, we contribute to knowledge-based internationalization literature by studying in depth the impact of two specific kinds of knowledge, namely international knowledge and technological knowledge. We argue that these kinds of knowledge influence the ability of Born Globals to discover and exploit new opportunities. International knowledge is a broad concept, encompassing specific international industry and marketing experience. We regard international knowledge as knowledge about managing relationships with foreign counterparts, and we define this knowledge as experiential knowledge about conducting business within an international setting. Technological knowledge is defined as experiential knowledge about the technology upon which a firm's products are built. We regard this knowledge to be purely technological and, thus, devoid of any business element. Therefore, we use technological knowledge to capture the experiential knowledge about technological issues connected to the founders and managers of the Born Global firms under investigation.

### 2.2. *The discovery and exploitation of opportunities within Born Global firms*

The discovery of opportunities that will lead to new business is crucial for the survival of Born Global firms. Agility and speed in relation to the exploitation of opportunities worldwide appear to be key factors of

success for these firms (Dimitratos & Jones, 2005). Earlier McDougall et al. (1994) commented on the exceptional ability of Born Global firms to discover opportunities in foreign markets. They noticed that the founders' unique backgrounds, knowledge, and networks enabled Born Globals to recognize opportunities for earning high returns in international markets, which were otherwise undetectable to others. Crick and Spence's (2005) study also showed that high performing small- and medium-sized enterprises (SMEs) are characterized by founders and managers who can identify and exploit international opportunities.

### 2.3. Uppsala school's perspective of discovery and exploitation of opportunities

Johanson and Vahlne (1977) argued that experiential knowledge enables firms to perceive concrete opportunities. Experiential knowledge helps firms realize how an opportunity can fit into present and future activities. This theoretical framework focuses on opportunities directly related to specific foreign markets. When firms act on these markets, the opportunities that they discover lead to the acquisition of new knowledge about how to conduct business in the markets, which in turn enhances their internationalization process. Experiential knowledge is obtained while interacting with other firms in the business network (Johanson & Vahlne, 1990; 2003). Resource commitments take place during the development of mutual relationships. When two firms are mutually connected, they can learn about and from each other. While interacting, they can also create new knowledge and develop opportunities for new business. Foreign market opportunities are thus developed as a consequence of the privileged knowledge business partners create when interacting with each other (Johanson & Vahlne, 2006). The process of opportunity discovery and exploitation is furthermore viewed from an opportunity development perspective, where knowledge development about and commitment to an opportunity are interrelated processes. The discovery of an opportunity and the decision to act on it happen almost simultaneously.

### 2.4. Austrian school's perspective of discovery and exploitation of opportunities

Kirzner (1997) argued the following:

An opportunity for pure profit cannot, by its nature, be the object of systematic search. Systematic search can be undertaken for a piece of missing information, but only because the searcher is aware of the nature

of what he does not know, and is aware with greater or lesser certainty of the way to find out the missing information (p. 71).

Kirzner (1997) stated that discovery happens in a situation of unknown ignorance when an entrepreneur is not aware what information is missing. A discovery is, therefore, naturally accompanied by an element of surprise, as the entrepreneur becomes aware of what previously had been overlooked. In contrast, a search can be undertaken for something that an entrepreneur knows is missing, and a successful search is, in this case, not followed by a surprise.

Using Casson (1982) as a theoretical reference, Shane and Venkataraman (2000) described entrepreneurial opportunities as those situations in which new goods, services, raw materials, and organizing methods can be introduced and sold at a profit. Kirzner (1997) perceived profit opportunities as events that are discovered and grasped by routine-resisting entrepreneurial market participants. To explain why some entrepreneurs, but not others, discover these opportunities, modern Austrian economics relies on assumptions of information asymmetry. The fact that people differ in the knowledge they possess is the source of entrepreneurship and opportunity discovery (Shane, 2000). Building on the work of Hayek (1945) and Kirzner (1997), Shane (2000) concluded that entrepreneurs discover opportunities related to the information they already possess and that their prior experience and education are, therefore, elements that influence the process of opportunity discovery. McKelvie and Wiklund (2004) claimed that the Austrian view emphasizes opportunity discovery but downplays opportunity exploitation. They also pointed out that a linear relationship between opportunity discovery and opportunity exploitation is commonly assumed. Entrepreneurs first discover an opportunity, which thereafter is exploited (Shane & Venkataraman, 2000). Opportunity exploitation is, in other words, considered a function of opportunity discovery (Shane, 2000). McKelvie and Wiklund (2004) strongly objected to this view as their study showed a mutual relationship between opportunity discovery and opportunity exploitation. They argued that opportunity exploitation influences opportunity discovery, and vice versa.

### 2.5. Integrating ideas from the Uppsala school and the Austrian school

Both the Uppsala School and the Austrian School assume their respective processes to be path dependent

and, thus, emphasize that prior knowledge influences the discovery of opportunities. Previous studies have demonstrated both of these theories to be relevant to the field of international entrepreneurship. McDougall et al. (1994) used arguments from the Austrian School to explain the early, rapid internationalization by new firms. Furthermore, several scholars have found that experiential knowledge is integral to the internationalization process of Born Globals (Autio et al., 2000; Sharma & Blomstermo, 2003). Their findings were in contrast to those of scholars who claimed the Uppsala model to be deterministic in nature (Bell, 1995; Reid, 1981) and, thus, not valid for studying Born Globals' internationalization (Bell, 1995). In this study, we support the arguments made in knowledge-based internationalization literature and advance the argument that the path-dependent nature of the Uppsala model does not prevent path-breaking learning to occur. Prior knowledge influences firms' internationalization process but does not determine these firms' paths of opportunity discovery and exploitation in a direct relationship. We thus find these two theoretical schools to be valid for studying opportunity discovery and exploitation within the field of international entrepreneurship.

In this study, we are interested in those opportunities that are related to Born Global firms' new business operations in foreign markets and refer to these opportunities as foreign market opportunities. Drawing on the research of Shane and Venkataraman (2000), we define these types of opportunities as those situations in which new goods, services, raw materials, and organizing methods can be introduced in a specific foreign market. In contrast to the Austrian view, these opportunities must not be directly connected to profit. We instead follow the Uppsala School's view in claiming that foreign market opportunities can imply an increased knowledge of foreign markets and of how to conduct business in these markets. One similarity between the two schools is that they consider the discovery of opportunity to be a reactive process because a discovery cannot result from an active search. This view differs from that of traditional Born Global

research, which describes these firms as proactive in their behavior (Madsen & Servais, 1997; Oviatt & McDougall, 1994, 1997) thus indicating that Born Globals' discoveries of foreign market opportunities are driven by proactive behavior. In this study, we perceive opportunity search activities as activities performed by Born Globals that know what is missing and how it can be found. These types of activities can be planned in advance. Opportunities that are discovered within ongoing foreign market activities are a consequence of chance rather than of planned activities. The concept of chance has been related to opportunities in entrepreneurship research (Bouchikhi, 1993) and is something that cannot be controlled by entrepreneurs and, consequently, planned. To determine whether Born Globals' discoveries are driven by proactive or reactive behavior, we argued that search activities reflect proactive behavior, whereas ongoing interactions with individuals in a specific foreign market reflect reactive behavior.

In our study, we considered the individual biotech firms to be the units of analysis. To investigate these firms, we explored how the levels of international and technological knowledge of the founders and managers have an impact on the processes of discovery and exploitation. Because Born Globals often compete in dynamic markets, we also argued that opportunity exploitation needs to be included to understand their discovery of opportunities. In dynamic markets, opportunities come and go at a rapid pace. To survive, these firms must be able to discover and exploit quickly the opportunities that they detect. We regard opportunity exploitation as the commitment of resources to a specific foreign market. We summarize our theoretical discussion by presenting definitions of the key concepts that have already been discussed and are used in this study (see Table 1).

### 3. The exploratory study: research method

To explore "how" Born Globals in the biotech industry handle their internationalization processes, we

Table 1  
Definition of key concepts used in this study

Key concept	Definition
International knowledge	Experiential knowledge about conducting business within an international setting
Technological knowledge	Experiential knowledge about the technology upon which the Born Global firm's products are built
Foreign market opportunity	Those situations in which new goods, services, raw materials, and organizing methods can be introduced in a specific foreign market
Opportunity search activity	Those activities in which a firm is able to define what is missing and how it can be found
Ongoing foreign market activity	Ongoing interactions between a firm and individuals in a specific foreign market

Table 2  
The investigated Born Global firms in 2003, at the beginning of the study

Firm	Business	Founded	No. of staff	Turnover (Thousands of USD)	Net profit/loss (Thousands of USD)	No. of interviews
A	Develops and sells microfluidic solutions for the life science industry	2000	70	639	−28048	5
B	Develops and sells products for genetic analysis in clinical research	1997	90	11 950	−24256	4
C	Develops and sells microsystems for the life science industry	1998	29	2 012	−2725	11
D	Develops and sells new drugs and dosage forms for improved drug treatment	1995	19	2 756	−3075	1
E	Develops and sells ready-made adjuvants for animal vaccine development	1999	7	933	−516	2
F	Develops and sells diagnostic products within the area of veterinary medicine and food safety	2001	25	2 450	−494	4
G	Develops and sells high-quality biochemicals for the life science industry	1995	10	1 076	123	5
H	Develops and sells products within the area of biological control and plant growth stimulation	1996	13	922	−1091	1

used a qualitative case study approach. Because we want to investigate context-specific phenomena with the aim of providing rich insight into human behavior, qualitative data are appropriate in this type of study (Guba & Lincoln, 1994). Qualitative (informal) interviews and observations are, furthermore, believed to provide the best opportunities for the study of processes (Gummesson, 1991). We decided to use a case study approach because this type of approach is generally preferred when “how” or “why” questions are posed (Yin, 2003) and when the aim is to build new theory from data (Eisenhardt, 1989).

We focused on the Swedish biotech industry because it is an example of a highly internationalized industry signified by rapid change and growth. The Swedish biotechnology industry has, in fact, had the most rapid growth of all sectors in Sweden during the last 10 years (SwedenBIO, 2005), thus making itself one of the leading biotech industries in the world. The next step in our data collection was to find a number of suitable candidates to become case firms. We selected the case firms from “The Swedish Biotech Industry Guide,” a database that lists and offers information about most Swedish biotech firms. We chose to focus on the large biotech cluster in Uppsala because this concentration of a group of firms in a single location facilitated data collection by providing continuous access to the founders and managers within the firms. To be included in this study, potential case firms also had to have their founders still working at their firms, had to conduct their own research and development (R&D), and must have at least one product sold in a foreign (i.e., non-Swedish) market. These criteria were chosen so that we could find

internationally active firms capable of managing the production chain themselves: from R&D to the interaction with international actors. These criteria limited the number of potential cases dramatically. We chose to contact qualified candidate case firms randomly. We started out by contacting one firm by telephone and then gradually continued to add firms in the same manner. All of the firms that we subsequently contacted agreed to participate in the study. Data collection was stopped after 14 companies had been visited. Because the interviews conducted at the last few firms provided us with narratives similar to those we had previously heard, the theoretical saturation point seemed to have been reached. New insights into the phenomenon (of biotech firms’ internationalization) were no longer gained, and the phenomenon, therefore, had been substantially explained (Glaser & Strauss, 1967). The theoretical saturation also indicated that it was unlikely that we would draw an incremental improvement of theory if we were to continue investigating more firms (Eisenhardt, 1989).

Only eight of the 14 firms were included in this study because these firms were the only ones that could be considered Born Globals. Tables 2 and 3 show that these eight firms fit into the commonly used operationalization that views Born Globals “as firms less than 20 years old that internationalised on average within three years of founding and generate at least 25 percent of total sales from abroad” (Knight et al., 2004, p. 649). Of the six firms that were excluded, one was too old (22 years) to be considered a Born Global and the remaining five firms had their first international sale more than three years after their inception (4, 8, 10 and 13 years).

Table 3  
The Born Globals' internationalization

Firm	Year of first foreign sale	Export percentage (compared to total sales)	Foreign market entries since foundation (regions of the world)	Internationalization modes	Nature of important value-creating activities in foreign markets <sup>a</sup>
A	2000/2001	80% (within 3 years after foundation)	Europe North America	Direct export to the closest European markets and own sales subsidiaries in the USA, Great Britain, and Germany. Distributors are used in several other European markets	Marketing and distribution
B	1999/2000	85% (within 3 years after foundation)	Europe North America South America Asia Africa Oceania	Direct export to the closest European markets and own sales subsidiaries in the USA, Great Britain, Germany, France, and the Benelux countries. Distributors are used in the other regions of the world	R&D, production, marketing, and distribution
C	1999	70% (within 6 years after foundation)	Europe North America	Develops products in cooperation with customers in Finland, Norway, Great Britain, the USA, and Germany	No important value-creating activities in foreign markets
D	1997	100% (within 3 years after foundation)	Europe Asia	Has sold a license for a product to a Japanese customer. Distributors are used in other markets	Marketing and distribution
E	1999/2000	98% (within 3 years after foundation)	Europe North America South America Asia Oceania	Has sold licenses to different firms in Europe and to Australia. Participates in research collaborations with organizations in North America, South America, and Asia	R&D and marketing
F	2001/2002	90% (within 3 years after foundation)	Europe North America South America Asia Africa Oceania	Uses direct export and seventeen distributors to reach the international markets	R&D, marketing, and distribution
G	1995/1996	28% (within 3 years after foundation)	Europe North America South America Asia Africa Oceania	Uses direct export to reach the international markets, except in Switzerland where a distributor is used	Marketing and distribution
H	1998	30% (within 10 years after foundation)	Europe	Uses direct export to reach the European markets, except in Finland where a distributor is used	Production, marketing, and distribution

<sup>a</sup> We see the most important value-creating activities as the key aspects of the value chain, namely research and development (R&D) activities, production, as well as marketing and distribution (Jones, 1999).

### 3.1. Data collection

In this study, we considered the individual biotech firms to be the units of analysis. To investigate their international development, we chose to conduct interviews with the group of founders and managers that had

been most responsible for managing the firms' internationalization processes. The first interviewees were always (one of) the founders. They, in turn, helped us identify other individuals who had been most involved in handling the internationalization processes of the firms (Yin, 2003).

Between January 2003 and June 2005, we conducted face-to-face interviews.<sup>4</sup> 33 face-to-face, semi-structured interviews were conducted with founders and managers at the eight firms. The interview times ranged from 40 to 160 min per interview with an average duration of around 120 min. All of the interviews, except for one that was conducted at a trade fair, were held at the firms' head offices in Uppsala, which enabled us to form a more in depth characterization of the individuals and places that we visited (Creswell, 2003).

A major strength of a case study data collection is the opportunity to use different sources of evidence (Creswell, 2003; Yin, 2003). Multiple sources of evidence are also particularly important in terms of strengthening the construct validity.<sup>5</sup> In addition to conducting semi-structured interviews with different employees at most of the sites, we used archival documentation from the firms and information about the firms collected from databases such as master theses, articles, and annual reports. We also established evidence chains and found that the documentary evidence corroborated with the stories provided by the different founders and managers. Another test was to receive feedback on drafts of the cases from the interviewees.

A key feature of this study's research design is the use of multiple cases, and our data analysis is based on comparing the findings of the individual cases. Comparative case studies of firms within the same industrial context facilitate comparison through replication of results, either literally (when similar responses emerge) or theoretically (when contrary results emerge for predictable reasons), and, thus, enable analytic generalization. Case studies rely on analytical generalization, in which the investigator strives to make a generalization about a particular set of results so as to fit into a broader theory. To strengthen the external validity of our multiple case studies, we followed an experiment-like replication logic when collecting the data (Yin, 2003). To ensure that the same topics were covered at all of the firms, we utilized a three-and-a-half-page interview guide.

<sup>4</sup> Since June 2005, we have continued to follow the development of these firms by collecting secondary data and conducting phone interviews with respondents at the investigated firms.

<sup>5</sup> The quality of empirical research in this explorative study was measured only in terms of construct validity, reliability, and external validity because internal validity is a concern only in causal (or explanatory) case studies (Yin, 2003).

To increase the reliability of the study, we kept a detailed account of our activities in a research protocol, which included transcripts of the audiotape recordings from all of the interviews, transcripts of our field notes and observations, and transcripts of the secondary data. Because the goal of reliability is to minimize errors and biases in a study, we enlisted two researchers to conduct the interviews at the investigated firms. The convergence of observations from multiple investigators enhances confidence in the findings and may even augment the creative potential of a study because complementary insights increase the richness of data (Eisenhardt, 1989).

#### 4. Cross-case analysis

To analyze the data from the eight case studies, we used cross-case synthesis. This technique treats each individual case as a separate study, and the analysis can reveal similarities as well as differences (Yin, 2003). Examples from all of the cases are presented in Table 4, which is followed by a discussion that includes vignettes from different cases within each group.

##### 4.1. International and technological knowledge

All of the eight firms in the study had founders and managers who possessed high levels of technological knowledge. Because these individuals had firsthand experience in developing their firms' products, they had the most solid technological knowledge possible, as far as the products were concerned. The importance of technological knowledge was also emphasized by one of company C's account managers, who remarked, "In this work, technical competence is more important than marketing competence... It is important that the individuals who sell our products have a broad technological knowledge-base so that they can solve the problems that our customers have."<sup>6</sup>

Although a high level of technological knowledge was evident in all of the case firms, our analysis showed that the founders' and managers' levels of international knowledge differed among the eight firms. Four of the Born Globals (A, B, C, and D) were started by individuals who had a great deal of experience managing international operations and possessed high levels of international knowledge. Company B was a

<sup>6</sup> Excerpt from an interview with one of company C's account managers, February 27, 2003.

Table 4  
The Born Globals' discovery and exploitation of foreign market opportunities

	International knowledge/ technological knowledge	Ongoing foreign market activities/search activities	Example of a discovery of a foreign market opportunity	Exploitation of a foreign market opportunity
The born A	The founders and managers have solid industrial backgrounds from working in multinational firms within the pharmaceutical industry. High levels of both international and technological knowledge characterize the firm	Uses search activities to find foreign market opportunities	The marketing manager seized the opportunity to recruit an old colleague from his previous workplace. This Englishman had many useful network connections in Great Britain and used them to bring company A its first British customers	Company A's strategy was, from the start, to open its own sales subsidiaries in the most important target markets. As in the case of the Englishman, all of the local sales staff were recruited locally. This involved a significant commitment of resources to these foreign markets
B	The founders and managers have solid industrial backgrounds from working in multinational firms within the pharmaceutical industry. High levels of both international and technological knowledge characterize the firm	Uses search activities to find foreign market opportunities	In the initial phase of the firm's existence, company B spent a great deal of resources creating awareness about the firm and its products. Company B's first international customer was an American company that had noticed the firm's targeted marketing and contacted company B as a consequence	The American market was one of company B's target markets. A sales subsidiary was opened in this market to create a close relationship with American customers, which involved a significant commitment of resources to this market
C	The founders and managers have solid industrial backgrounds from working within the life science industry. High levels of both international and technological knowledge characterize the firm	Uses search activities to find foreign market opportunities	One of company C's first foreign customers was a large Finnish firm. The founder became interested in developing a technological application for this firm and inquired from different network connections whether they knew anyone at the Finnish firm that he could talk to about this. From a network connection, he received the names of two employees who worked at the firm. Before the founder had made the time to contact them, he accidentally ran into them at a conference in Germany, and a deal was made	When company C sells applications for its products to foreign customers, it commits resources to foreign markets because product applications have to be developed in close collaboration with international customers. Even though the firm has not committed enough resources to open its own sales subsidiaries in the target markets, the staff often travels to meet their customers face-to-face
D	The founders and managers have solid industrial backgrounds from working within the life science industry. High levels of both international and technological knowledge characterize the firm	Uses search activities to find foreign market opportunities	Company D's first international customer was a Japanese firm that had contacted company D because it had wanted to purchase a license for a product that it wanted to sell on the Japanese market. This firm had learned about company D while coming across one of its patent applications	Company D regarded the cooperation with the Japanese firm as a great opportunity to enter and learn about this market; it committed resources to this market by staying in close contact with this Japanese partner

Table 4 (Continued)

International knowledge/ technological knowledge	Ongoing foreign market activities/search activities	Example of a discovery of a foreign market opportunity	Exploitation of a foreign market opportunity
<p>The born academics</p> <p>E The founders and managers have solid academic backgrounds as university researchers. The firm is characterized by a high level of technological knowledge and a low level of international knowledge</p>	<p>Uses ongoing foreign market activities to find foreign market opportunities</p>	<p>One of company E's first Chinese research collaborators heard about the firm via a Chinese student. This person was studying at Uppsala University where he had learned about company E's products. When he returned to China, he later told a Chinese firm about company E, and it, consequently, contacted the firm</p>	<p>Company E has committed resources to the Chinese market even though most of the communication is managed via email. Company E meets its partners about once a year, and the founder has already traveled to China several times</p>
<p>F The founders and managers have solid academic backgrounds as researchers at a governmental research institute. The firm is characterized by a high level of technological knowledge and a low level of international knowledge</p>	<p>Uses ongoing foreign market activities to find foreign market opportunities</p>	<p>Company F uses distributors to handle most of its foreign sales. Usually, distributor firms initiate contact with company F—the other way around. However, company F met its Belgian distributor at a trade fair in Germany. The meeting was coincidental, but after evaluating the distributor, company F decided to start cooperating with the firm and made it responsible for the Belgian market</p>	<p>Belgium was a market where company F had not been previously present. The firm commits resources to the market by following up the distributors work. The employees keep in continuous contact with the distributors and even conduct regular visits to their home offices, where the distributors are educated about the application and use of company F's products</p>
<p>G The founders and managers have solid academic backgrounds as researchers at the university and a governmental research institute. The firm is characterized by a high level of technological knowledge and a low level of international knowledge</p>	<p>Uses ongoing foreign market activities to find foreign market opportunities</p>	<p>One of company G's first German customers started contacting the firm via email and telephone. Company G had not marketed itself toward the German market, but customers had heard about its products from another German firm</p>	<p>To exploit the opportunity that had revealed itself in the German market, company G decided to commit resources to the German market by employing a German student for six months. This individual communicated with the customers in German via email and telephone, and also translated material about the products into German</p>
<p>H The founders and managers have solid academic backgrounds as university researchers. The firm is characterized by a high level of technological knowledge and a low level of international knowledge</p>	<p>Uses ongoing foreign market activities to find foreign market opportunities</p>	<p>Company H's first Austrian customers came in contact with the firm via one of the founders. A person at this Austrian organization first heard about the products when he and this founder worked together in an EU-sponsored research project. The Austrian became interested in company H's products and wanted to import them</p>	<p>Because Austria is well known for its ecological farming, this was an important market for company H. The firm has committed resources to this market by working at convincing the Austrian government to approve the sales of the products in the market</p>

typical example of this type of Born Global. Most of the employees who were responsible for the firm's initial internationalization had solid industrial backgrounds as managers in multinational firms within the pharmaceutical industry. One of the founders commented that "Our internationalization strategy is a result of the collected experience of our management team. Our approach has always been to employ industrialists who have experience of participating in internationalization processes from their previous places of employment."<sup>7</sup>

In contrast to companies A, B, C and D, the other four Born Globals in the study (E, F, G, and H) were started by individuals who possessed high-ranking academic titles but lacked knowledge about foreign market business. These individuals gained technological knowledge while working in academic settings, such as universities and governmental research institutes, but had low levels of international knowledge. Company E's founder even said that "There has never been any explicit knowledge about internationalization within the firm."<sup>8</sup>

When we analyzed the levels of international and technological knowledge of all the eight firms' founders and managers, two subgroups emerged. The first group consisted of firms A, B, C, and D, which we referred to as the "Born Industrials" because all of these firms were started and initially managed by individuals who possessed an experiential knowledge combination consisting of high levels of both technological knowledge and international knowledge. In contrast, firms E, F, G, and H were denoted "Born Academics" because they were founded and initially managed by researchers with academic backgrounds. The founders and managers of these firms typically possessed an experiential knowledge combination that consisted of high levels of technological knowledge and low levels of international knowledge. Examples of the discovery and exploitation of foreign market opportunities by these two groups are summarized in Table 4.

#### 4.2. The discovery of foreign market opportunities

The four Born Industrial firms are all characterized as having from the very start a clear and settled strategy on which markets and customers to focus. One of company B's founders made the following comment:

We have always worked in accordance with a clearly defined strategy. It was the marketing director and the CEO that developed the strategy, and their previous experiences affected its design. The internationalization strategy that was developed already in 1999 said that we were to handle our own entry into the most important geographical markets and let distributors handle the rest.<sup>9</sup>

Similar to company B, the other Born Industrials followed a clear internationalization strategy and performed focused search activities to better position themselves in an effort to capitalize on any foreign market opportunities available in their target markets. The Born Industrials had thus decided on the objective of their search activities and on how these activities were to be performed—sometimes these decisions were made even before the firms had started selling their products.

In contrast to the Born Industrials, the Born Academics (companies E, F, G and H) initially did not have clear and settled objectives of which markets and customers to target, thus it was evident that these firms were not following a specific strategy. The senior vice president of company F acknowledged that "When we started, we rather worked in accordance with a vision than a formulated strategy. Our goal was to produce the best possible tests within our segment."<sup>10</sup> The marketing director at the same firm also noted that "So far, we have rather met our customers by coincidence than as a result of an active search process."<sup>11</sup> Based on these comments and our analysis of the other cases, it appears that Born Academics are characterized by their ongoing foreign market activities rather than by their own search activities.

Because the Born Industrials are focused on searching for opportunities that have been identified as crucial, the possibility of making unexpected discoveries based on pure chance is limited. These firms typically discover opportunities within the context of those markets they have already targeted. For example, companies A, B, and C in our study discovered opportunities in the same markets where they had already performed search activities (see Table 4). Our data analysis also provided examples

<sup>7</sup> Excerpt from an interview with one of company B's founders, February 13, 2003.

<sup>8</sup> Excerpt from an interview with company E's founder, March 4, 2003.

<sup>9</sup> Excerpt from an interview with one of company B's founders, February 13, 2003.

<sup>10</sup> Excerpt from an interview with company F's senior vice president, March 19, 2003.

<sup>11</sup> Excerpt from an interview with company F's marketing director, March 26, 2003.

of Born Industrials discovering opportunities based on chance rather than as a result of planned search activities, exemplified here by the case of company D being contacted by a Japanese customer (see Table 4). However, the overall analytical pattern indicates that the discovery of opportunities as a consequence of chance is generally not significant for Born Industrials. One of company A's founders acknowledged that "I cannot give one example of an event that has been totally unplanned. This has to do with the responsibility of using venture capital investments. You have a great responsibility, and every action has to be well considered and planned."<sup>12</sup>

In comparison, the Born Academics (companies E, F, G, and H in this study) did not follow an explicit strategy for discovering foreign market opportunities. Their discoveries occurred as a consequence of their ongoing foreign market activities rather than of focused searches. They discovered foreign market opportunities by chance in markets that they had not considered prior to the occurrence of the unexpected discovery (see Table 4).

Table 4 also shows that some of the Born Globals made use of their staff members' networks of relationships as a means of discovering foreign market opportunities. The networks could be used to discover useful employees (as in the case of company A), to provide helpful advice (as in the case of company C), or to find individuals who could function as gateways to new customers (as in the case of company E and H). We also noticed that the Born Industrials made discoveries in their networks as a consequence of conducting active searches. For example, company A searched its staff's business networks to find good employees. In addition, company C's founder used his existing business network to find information about the Finnish firm. In contrast, company E and H (Born Academics) had not searched their founders' and managers' networks to find gateways to the Chinese and Austrian markets; however, these opportunities appeared by chance as a result of the firms' ongoing research activities.

#### 4.3. The exploitation of foreign market opportunities

The eight Born Globals in this study also differed in their means of exploiting foreign market opportunities. For example, two of the Born Globals (companies A and

B) established sales subsidiaries with local staff in target markets where they discovered foreign market opportunities (see Tables 3 and 4). In comparison to the other firms, companies A and B were larger and had received greater financial resources in the form of venture capital at their inception. These resources enabled them to set up sales subsidiaries and, thus, rapidly commit large amounts of resources to these markets. The founders' and managers' high levels of international knowledge could explain the venture capitalists' decision to invest such relatively large amounts of financial resources in these two firms. One of the founders of company A commented that "Our management's extensive leadership experience in the industry has had a significant effect on our efforts to attract money."<sup>13</sup> For the Born Academics and the other two Born Industrials (companies C and D), only comparatively limited amounts of resources were committed to exploiting discovered foreign market opportunities. In comparison to the large initial investments of companies A and B, the increase in resource commitments by these Born Globals followed a more incremental pattern.

## 5. Discussion

The purpose of this study was to explore how founders' and managers' levels of international knowledge and technological knowledge are related to Born Global firms' discovery and exploitation of foreign market opportunities. Our investigation revealed both similarities and differences among the eight Born Globals included in our study. All of these Born Globals sell products to several regions of the world. A majority of the firms used direct sales and distributors to reach customers; however, two of the firms also opened their own sales subsidiaries in target markets. The value-creating activities in foreign markets differed among the firms, ranging from company C, which handles all activities from its head office in Sweden, to company B, which handles R&D, production, marketing, and distribution activities in foreign markets (see Table 3).

Even though these firms differed in some areas, they shared one major similarity: All of them were initially managed by individuals with high levels of technological knowledge. Since all of the investigated Born Globals are biotech firms, specialized in applications of sophisticated technology and the development of unique products, the founders' and managers' high

<sup>12</sup> Excerpt from an interview with one of company A's founders, February 7, 2003.

<sup>13</sup> Excerpt from an interview with one of company A's founders, February 7, 2003.

levels of technological knowledge were used to sell the firms' products in international markets. The analysis reveals that often it were the international customers that instigated the business relationships with the Born Globals, because they became interested in the products and technical solutions that these firms could provide. This suggests that technological knowledge has a positive impact on the early internationalization of the investigated firms.

Even though all the investigated Born Globals' founders and managers possess high levels of technological knowledge, the same cannot be said for their levels of international knowledge. Because of the difference in the degree of international knowledge possessed by these founders and managers, we recognized a need to dichotomize the concept of Born Globals into two subgroups. Born Industrial firms are characterized by their founders' and managers' combinations of high levels of both technological and international knowledge, whereas Born Academics are characterized by their founders' and managers' combinations of high levels of technological knowledge and low levels of international knowledge.

The founders' and managers' levels of technological and international knowledge are also related to how Born Industrials and Born Academics discover foreign market opportunities. The high levels of international knowledge of founders and managers in Born Industrial firms have been used to plan these firms' structured internationalization strategies. Born Academics, with founders and managers that possess only low levels of international knowledge, do not work in accordance with a structured internationalization strategy. Born Industrials have, for the most part, discovered foreign market opportunities within the context of their search activities. Thus, the discovery of foreign market opportunities by Born Industrials is driven by a proactive behavior. In contrast, Born Academics are characterized by their tendency to discover foreign market opportunities in their ongoing foreign market activities. Because Born Academics discover opportunity as a consequence of chance rather than of planned activities, we consider this particular type of behavior to be reactive.

In the literature, Born Globals have been described as having an advantage in being more flexible because of the lack of established practices and routines stemming from the absence of an organizational history (Knight et al., 2004). In this study, Born Academics appeared to be more flexible than Born Industrials because these firms' discoveries were made as a consequence of chance rather than of a proactive

search. However, we do not imply that Born Academics necessarily discover better or more profitable opportunities than Born Industrials. The meaning of flexibility here is that Born Academics are more open to discovering unexpected opportunities because they are not as constrained by the boundaries of structured search activities in specific target markets as Born Industrials.

Our study also showed that two of the Born Industrials (company A and B), in comparison to the group of Born Academics, exploit their foreign market opportunities more rapidly by committing more resources to foreign markets in their initial investments, whereas Born Academics generally exploit their opportunities in a more incremental pattern. This also suggests that Born Industrials tend to internationalize more rapidly than Born Academics. Whereas, previous studies within the field of early and rapid internationalization of firms have strongly emphasized that Born Globals' speed of internationalization differs from the internationalization pattern of large, established MNCs, few studies have, to the best of our knowledge, acknowledged the differences in internationalization processes that can exist within the group of Born Globals. By presenting findings that the internationalization processes of Born Global firms differ due to the individual knowledge combinations of founders and managers, our study makes an important contribution to knowledge-based internationalization literature, as well as to the theoretical discussion of Born Globals.

Compared to several other studies of Born Globals (Andersson & Victor, 2003; Crick & Jones, 2000; Crick & Spence, 2005; Oviatt & McDougall, 1997; Sharma & Blomstermo, 2003), our study contributes to this research field by demonstrating that not all Born Globals are started by individuals with high levels of international knowledge. Some Born Globals are instead founded and managed by individuals who solely rely on their high levels of technological knowledge. The differences in their combinations of technological and international knowledge in turn impact their behavior in discovering foreign market opportunities. Our study demonstrated that Born Academics discover foreign market opportunities in accordance with the reactive behavior described in the Austrian School of Entrepreneurship and the Uppsala Internationalization Process Model. In contrast, Born Industrials were found to demonstrate a proactive behavior toward the discovery of foreign market opportunities, thus supporting the arguments put forward in traditional Born Global research (Madsen & Servais, 1997; Oviatt & McDougall, 1994, 1997).

The dispute surrounding this issue may be a consequence of existing Born Global research, which almost exclusively has regarded Born Globals as a homogenous group of firms. Even though recent research has started creating typologies of Born Globals (Knight & Cavusgil, 2005), we claim that research analyzing Born Globals as heterogeneous groups of firms is needed to gain a deeper understanding of these firms' internationalization behavior.

Because differences in internationalization processes exist within the group of Born Globals under investigation in this study, this finding suggests that no one theory can be used to explain the behaviors of all Born Globals. Even though this study confirms the relevance of the Austrian school and the Uppsala school in explaining the internationalization pattern of one group of Born Globals (e.g., Born Academics), we also find that another group of Born Globals (e.g., Born Industrials) follows the internationalization pattern explained by traditional Born Global research. Therefore, to explain the internationalization processes of several groups of Born Globals, we find that a more holistic theoretical approach is needed to guide this field of Born Global research to new, pioneering insights into firms' internationalization processes.

### 5.1. Recommendations for practitioners

Firms that operate in dynamic markets and are subjected to frequent market changes need the ability to adapt rapidly to new conditions and opportunities. The previous knowledge of the founders and managers can influence the way that they will react to emerging opportunities. Individuals with high levels of international knowledge are more likely to make decisions similar to those that have proved to be successful in the past, whereas individuals with low levels of international knowledge seem to be more open to discovering unexpected opportunities. As most Born Global firms need both the benefits of experience and the ability to adapt rapidly to new conditions and opportunities, staff with different experiences of internationalization processes can be a solution. A good balance can be achieved by matching the existing employees with new ones, whom possess the kind of knowledge that the firm lacks.

### 6. Limitations and suggestions for further research

Because of the limitations of time and space, this study focused on the prior experiences of founders and

managers at Born Globals and the theoretical concept of experiential knowledge. Other factors that might have influenced the various internationalization patterns of the Born Global firms, such as the impact of the founders' and managers' motivations or personality traits, have thus been disregarded in this study. Future research that includes these aspects could increase the knowledge of and insight into these kinds of firms. A second limitation has to do with the fact that we analyzed only the first phase of the internationalization of Born Globals under investigation, and did not discuss how differences in the discovery and exploitation of opportunities have influenced the performances of these firms. Future research about Born Globals should include performance measures to determine if differences in performance between Born Globals exhibiting reactive behavior (i.e., Born Academics) and those exhibiting proactive behavior (i.e., Born Industrials) exist. Further qualitative studies with longitudinal approaches could be conducted to follow up the performances of these firms and, thereby, present a more holistic picture of the effects of these differences.

The case study approach is receiving greater scientific approval because it produces results with a high level of validity, from which generalizations can be drawn. However, the narrow scope of this study, which focused on only Born Global case firms in one industry of one country, does not permit broad generalizations to be made based on our findings. Therefore, conducting quantitative studies in the future, from which generalizations can be derived, may prove useful.

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## **ARTICLE 3**

### **Turning social capital into business: A study of internationalization in biotech SMEs**

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**Turning Social Capital Into Business: A Study of Internationalization in  
Biotech SMEs**

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### **Abstract**

This study examines how small- and medium-sized enterprises (SMEs) from the biotech industry use different dimensions of individuals' social capital to acquire necessary resources for their internationalization processes. To follow the processes a longitudinal cross-case study of 14 Swedish biotech SMEs was conducted. The results show that all dimensions of social capital affect acquisition of foreign market knowledge and financial resources, but also that the usefulness of individuals' social capital often changes during SMEs' internationalization. Moreover, social capital use can contribute to a rapid internationalization, but this may impede a firm's understanding of a foreign market. We thus find that those biotech SMEs that experienced an incremental internationalization process were the most successful. The results also suggest that when biotech SMEs graft new managers, they need to put more emphasis on integrating the managers' social capital with the firms'.

### **1. Introduction**

The increasing importance of internationalizing SMEs has led to a rapid growth in the number of studies that focus on SMEs operating within high-tech markets (Crick and Spence, 2005; Jones, 1999). These studies have highlighted the need for two critical resources in high-tech SMEs' internationalization processes: foreign market knowledge (FMK)—seen as experience of foreign market operations, including business counterparts and institutions (Autio, Sapienza, and Almeida, 2000; Sharma and Blomstermo, 2003)—and financial resources (Bell, 1997; Spence, 2003). To acquire these scarce resources, high-tech SMEs use their networks (Bell, 1995; Coviello and Munro, 1997), particularly the personal networks of founders and managers (Crick and Spence, 2005; McDougall, Shane and Oviatt, 1994; Moen, Gavlen and Endresen 2004). However, we were surprised to find that few previous studies have merged personal networks and resource acquisition into the concept of social capital when investigating the internationalization processes of high-tech SMEs. Since social capital incorporates the network of relationships for a network member and the resources available through that network (Adler and Kwon, 2002; Portes 1998) it could prove useful for studying internationalization. In a study from 2005, Autio, Sapienza, and Arenius confirm the lack of studies in internationalization literature addressing social capital, and others have argued that much remains to be done to examine the effects of social capital in international expansion (Yli-Renko, Autio, and Tontti, 2002). Our study answers this call for more research by focusing on how one type of high-tech firms, biotech SMEs, acquires critical resources to

expand internationally. We study the social capital possessed by key individuals (i.e., persons who have been responsible for managing the firm's internationalization) and how the critical resources foreign market knowledge (FMK) and financial resources can be acquired through their personal networks, since these kinds of networks are considered to be particularly important for biotech firms (Liebeskind, Oliver, Zucker, and Brewer, 1996). We also investigate the structural, relational and cognitive dimensions of social capital and their influence on internationalization. Thus, the purpose of this study is to examine the effects of individuals' social capital dimensions on biotech SMEs' acquisition of FMK and financial resources in their internationalization processes.

This article makes several contributions to the study of high-tech SMEs' internationalization. First, by using the concept of social capital and its dimensions in investigating acquisition of foreign market knowledge and financial resources in the internationalization process of biotech SMEs, the study contributes to the understanding of the effects of social capital in an international context. Second, we have conducted an explorative case study of 14 Swedish biotech SMEs. By doing so, we contribute by following the internationalization processes themselves as the firms expand into foreign markets. Third, we also contribute to theory by incorporating individuals' social capital. In doing so, we can describe an internationalization process model that more comprehensively captures the internationalization of high-tech SMEs.

This article will proceed by presenting the theoretical framework and the research method used in this study. The cases are then presented and analyzed. Finally, conclusions and limitations of this study are discussed.

## **2. Theoretical framework: The internationalization process**

The internationalization process model (IP model) describes internationalization as "a process in which firms gradually increase their international involvement" (Johanson and Vahlne, 1977, p.23). It is an incremental learning process where the uncertainties that firms face when expanding into a foreign market can be lowered by acquiring FMK. This can only be done through increased FMK by operating on the foreign market. Increased FMK will lower uncertainties but also increase the ability to perceive business opportunities and can as a result lead to higher commitment on a foreign market. This includes moving from direct export to establishing cooperation with a foreign counterpart, to establishing a subsidiary on the foreign market. An incremental process occurs because the foreign market knowledge acquired in a

prior stage of the process will influence decisions made further on. Hence foreign market knowledge influences firms' internationalization and performance (Blomstermo, Eriksson, Lindstrand and Sharma, 2004).

### *2.1. The individual and grafting in the internationalization process*

It is always individuals that acquire the FMK, as it is based on personal experience of foreign operations (Eriksson, Hohenthal and Johanson, 1998). In the IP model, the influence of individuals' decision making is implicit and the model instead uses the firm as the object of study. Studies of SMEs have, however, indicated that to exclude the influence of individuals in analyzing these firms' internationalization would leave out important elements (McDougall et al., 1994). Crick and Jones (2000) found that the prior international experience of founders and managers of high-tech SMEs influenced the decision-making in these firms' internationalization. Autio (2005) also pointed out that in new and small firms, firm-level knowledge cannot supersede individual-level knowledge as these firms lack an organizational history.

One way to acquire new FMK, which is only briefly mentioned in the IP model, is to bring it from outside the firm. Huber (1991) argues that organizations, in addition to experiential learning, can acquire important knowledge through grafting—that is, by acquiring new persons who possess knowledge not previously available within the organization. Grafting allows a firm to acquire needed FMK faster than through experience and can be a mean for firms to acquire a critical resource in their internationalization processes (Barkema and Vermeulen, 1998; Forsgren, 2002). In dynamic foreign markets, grafting can be a way to adapt rapidly to new market conditions.

### *2.2. Social capital and the internationalization process*

Several scholars who have examined high-tech SME internationalization have criticized the incremental nature of the internationalization process (Bell, 1995; Knight and Cavusgil, 1996) a study by Autio et al. (2000), however, provides support for the incremental process. These authors argue that small, newly started high-tech firms take small, incremental steps in their internationalization processes but are able to do so at a more rapid pace than established firms. Their finding suggests that new high-tech SMEs must experience more rapid learning than established firms in order for rapid internationalization to occur. To accelerate the learning and internationalization processes, SMEs use their social networks (Crick and

Spence, 2005; Yli-Renko et al., 2002). McDougall et al. (1994), for instance, emphasize that social networks developed by founders can facilitate knowledge acquisition for small and newly started international firms. Their findings were later supported in studies of high-tech SMEs (Andersson and Wictor, 2003; Moen et al., 2004). We find that these studies have indirectly identified the significant role played by social capital for internationalizing high-tech SMEs, by showing the important connection between networks and resource acquisition in internationalization. Autio (2005) also acknowledges that whereas McDougall et al. (1994) did not explicitly mention social capital in their study, their findings point to the international social capital of the entrepreneur as an important facilitating condition for early internationalization.

Social capital is both an accepted and an elusive concept. Elusive in that there exist many views on what social capital constitutes, although most scholars of social capital seem to agree that the concept incorporates the network of relationships for a network member and the resources available, for action and activities, through that network (Adler and Kwon, 2002; Portes 1998). Some scholars focus on the individuals' benefits from social capital (Burt, 1997), some see it as beneficiary for a social unit (Coleman, 1988), and some incorporate both (Inkpen and Tsang, 2005; Nahapiet and Ghoshal, 1998). In this study, we focus on the benefits of the individuals' social capital for the larger social unit, the internationalizing biotech SME.

In their 1998 article, concerning social capital's effect on intellectual capital and organizational advantage, Nahapiet and Ghoshal state that social capital has a facilitating role for firms' knowledge acquisition and learning. Building on this study, Inkpen and Tsang (2004) argue that social capital is beneficial for knowledge transfer. Empirical studies have supported these arguments and shown that social capital does affect knowledge acquisition and learning (Tsai and Ghoshal, 1998; Yli-Renko et al., 2001). Yli-Renko et al. (2002) support the connection between social capital and learning in an international setting, by giving evidence of social capital's facilitating effects on high-tech SMEs' acquisition of FMK. Other studies also give evidence of social capital's effect on knowledge acquisition for international high-tech SMEs (Autio et al., 2005; Presutti, Boari and Fratocchi, 2007). A common result for all of these studies is that social capital facilitates learning by affecting the conditions for knowledge acquisition and learning.

Through experiences of interaction within networks, individuals and firms learn where to find the needed foreign market knowledge (Blomstermo et al., 2004; Johanson and

Vahlne 1990; 2003; Moen et al., 2004). They also learn when, how and if it is possible to connect themselves to those in possession of that resource. This connectivity leads to specific networks and thus social capital, which become the individuals' and firms' capability for developing ongoing international business (Lindstrand, 2003; Yli-Renko et al., 2002). Thus, we argue that in an international SME context, social capital influences the conditions for experience-based learning and acquisition of foreign market knowledge in the internationalization process. Social capital influences the ability to acquire FMK and continue internationalization, since social capital defines with whom, where and how experience-based learning take place.

### *2.3. The different dimensions of social capital*

Nahapiet and Ghoshal (1998) separated social capital into three dimensions: structural, relational, and cognitive. Each of these dimensions has been shown to affect knowledge acquisition for firms (Yli-Renko et al., 2001). Translated into the context of SME internationalization, this means that these three dimensions will affect the individual's ability for acquisition of FMK. The structural dimension of social capital describes the overall pattern of connections between individual members of the network (Coleman, 1988) and is associated to what Granovetter (1985) distinguished as structural embeddedness. It is how social interaction within the personal network is structured—that is who you reach and how you reach them (Burt, 1992). The structural dimension highlights the network configuration of individuals and what knowledge is available through the structure of personal networks. In internationalization the availability of FMK from social capital depends on who is a part of the structure and who you interact with. Thus the structural dimension of social capital has been shown to have a positive effect on knowledge acquisition for foreign development of high-tech firms (Presutti et al. 2007).

If the structural dimension of social capital is the connections between members of the network, the relational dimension is the content of these connections (Nahapiet and Ghoshal, 1998). This dimension consists of the personal relationships people develop with each other through repeated interactions (Håkansson and Johanson, 1992). Among the key elements in this dimension are trust, trustworthiness and social interaction between the individuals (Coleman, 1990, Tsai and Ghoshal, 1998). The relational dimension can be seen as a prerequisite for experience-based learning, since relationships convey personal interaction. Yli-Renko et al. (2002) showed that the relational dimension, seen as close

cooperative relationships with customers, had a positive effect on high-tech firms' acquisition of FMK. It is important that the elements of the relational dimension are met for knowledge acquisition to occur.

The cognitive dimension of social capital manifests the perspectives, narratives, values, language, and goals that the individual members share with each other (Nahapiet and Ghoshal, 1998). The cognitive dimension facilitates interaction among individual members by incorporating a sense of general understanding of appropriate ways to interact, and has been shown to have an effect on resource acquisition and exchange within the network (Tsai and Ghoshal, 1998). Individuals who have the same frame of mind and goals find it easier to understand and learn from one another. Thus the cognitive dimension facilitates the acquisition of FMK.

Research has also indicated that there is a relationship between social capital and acquisition of financial resources (Batjargal and Liu, 2004; Florin, Lubatkin, and Schulze, 2003). Spence (2003) found that limited financial resources were perceived to be the main constraint to internationalization among high-tech SMEs. Venture capital was the most likely source of additional funding, and to acquire these financial resources, high-tech SMEs used their networks. The structural dimension of an individual's social capital is thus important in enabling a high-tech SME to come in contact with financial counterparts. Bell (1997) reveals that major export problems for these firms tended to be finance-related. Problems in obtaining financing were often connected to the fact that banks considered small firms to be high risk. The relational dimension of social capital is, therefore, indicated to be of importance for a high-tech SME to acquire financial resources. Elements such as trust and social interaction might even be preconditions for a small high-tech SME to acquire financial resources from a counterpart. Several high-tech SMEs also sell products that are either "totally new" or radically different from existing products in the market (Sharma and Blomstermo, 2003), which further can increase the need for trust in the personal relationships between financial counterparts and a small high-tech firm. The cognitive dimension of social capital might be just as important as the relational dimension. The elements of the cognitive dimension can contribute to the acquisition of financial resources because shared values, goals, and language can influence financial counterparts' willingness to invest in a small high-tech firm.

Based on the discussion above, we formulate four propositions concerning the effect of the different dimensions of individuals' social capital, on biotech firms internationalization processes.

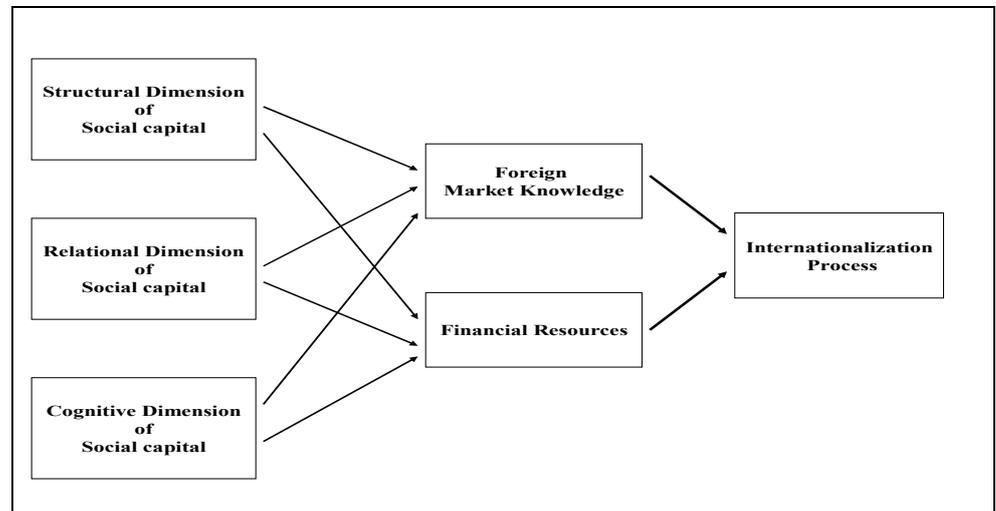
Proposition 1: The structural dimension of the individuals' social capital will affect the biotech firm's acquisition of foreign market knowledge and financial resources.

Proposition 2: The relational dimension of the individuals' social capital will affect the biotech firm's acquisition of foreign market knowledge and financial resources.

Proposition 3: The cognitive dimension of the individuals' social capital will affect the biotech firm's acquisition of foreign market knowledge and financial resources.

Proposition 4: The biotech firm's acquisition of foreign market knowledge and financial resources will affect its internationalization process.

The four propositions can be summarized in a model:



**Model 1** Summarizing model.

### **3. Research method**

To examine the effects of individuals' social capital dimensions on biotech SMEs' acquisition of FMK and financial resources in their internationalization processes, we used a qualitative, longitudinal, multiple-case-study approach. We chose this approach in order to actively follow the investigated firms' internationalization processes and to build new theory from data (Eisenhardt, 1989).

We focused on the Swedish biotechnology industry because it is an example of an internationalized high-tech industry marked by rapid change and growth. With 230 biotech firms, Sweden has the largest share of biotech companies per capita in the world (SwedenBIO, 2005); most of these companies are small enterprises. We selected the case companies from "The Swedish Biotech Industry Guide," a database that lists and offers information about most companies in the Swedish biotech field. We chose to focus on the biotech cluster in the Swedish city of Uppsala. Our reasons for choosing this cluster is that the Uppsala cluster includes about one fourth of Sweden's biotech field in the shape of two universities, three large national research agencies as well as about 60 firms working in and around the biotech industry. The cluster also has the advantage of geographical closeness to many of Sweden's largest venture capital investment companies that are located in Stockholm. In relative terms, Uppsala has, furthermore, been described as one of the most biotech-intensive cities in the world (Waxell and Malmberg, 2007) and its concentration of a multitude of interesting organizations in such a comparatively small area facilitated data collection by providing easy and continuous access to interviewees.

Besides being part of the Uppsala biotech cluster, potential case firms also had to be SMEs, had their founders still working at their firms, had to conduct their own research and development (R&D), and must have at least one product sold in a foreign (i.e., non-Swedish) market. These criteria were chosen so that we could find internationally active firms capable of managing the production chain themselves: from R&D to the interaction with foreign actors. Because the founders of small entrepreneurial enterprises have often been shown to play important roles in the firms' first years of internationalization (McDougall et al., 1994), we also wanted the founders to be still active in the firms. We chose to contact qualified candidate case companies randomly. We started out by contacting one company by telephone and then gradually continued to add companies in the same manner. All of the companies that we subsequently contacted agreed to participate in the study.

We have alternated between theoretical and empirical work throughout the course of this study. We have used existing theory concerning social capital and the internationalization process, which we then developed further through the cases. After 14 companies had been visited (see Table 1), the theoretical saturation point had been reached, as the interviews conducted at the last few firms provided us with narratives similar to those we had previously heard. New insights into the subject of biotech companies' use of social capital in their internationalization were no longer acquired, and therefore, had been substantially explained. Reaching the theoretical saturation point also indicated that it was unlikely that we would obtain an incremental improvement of theory if we were to continue investigating more companies (Eisenhardt, 1989). To maintain anonymity, the case firms and their products are represented by aliases.

**Table 1**  
The investigated biotech SMEs.

Firm	Develops and sells (Business)	Founded	Year of first foreign sale	Interviews
1	Tests for detection and monitoring of viral diseases.	1984	1995	2
2	Products for biological control and plant growth stimulation.	1996	1998	1
3	High-quality biochemicals for the life science industry.	1995	1995/1996	5
4	Products based on bioceramic technology.	1987	2000/2001	2
5	Ready-made adjuvants for animal vaccine development.	1999	1999/2000	2
6	Diagnostic products in the areas of veterinary medicine and food safety.	2001	2001/2002	4
7	Products for DNA identification and quantification.	1990	1998	1
8	Products aimed at predicting the onset of arthritic diseases	1998	2001	1
9	Products for genetic analysis in clinical research.	1997	1999/2000	4
10	Microfluidic solutions for the life science industry.	2000	2000/2001	5
11	Microsystems for the life science industry.	1998	1999	11
12	New drugs and dosage forms for improved drug treatment.	1995	1997	1
13	Medical devices for the field of interventional cardiology.	1988	1998	2
14	Kits based on immunological reactions.	1991	1994	1

### 3.1. Data collection

To investigate biotech SMEs' international development, we chose to interview key individuals who had been most responsible for managing each firm's internationalization process, typically the founders and managers of the 14 investigated firms. Between January 2003 and June 2005, we conducted the face-to-face interviews with these key individuals. A total of 42 semi-structured interviews were conducted. The interview times ranged from 40 to 160 minutes per interview, with an average duration of around 120 minutes.

To ensure that the same topics were covered at all of the firms an interview guide was utilized. Questions about the history of the firms and their initial internationalization processes were included in the guide. The guide also included questions

that sought to map whether the firms' social capital had influenced their internationalization. Examples of such questions are: What is your educational and professional background (in universities, firms, organizations etc)? How did the firm get its first foreign customers (via personal relationships, marketing efforts etc.)? Which actors were specifically involved in the creation of business relationships between your firm and your foreign customers (Were there any existing relationships between your employees and actors in the foreign market etc.? If there were, why did you rely on these individuals)? The interview-guide was only departed from when particularly interesting topics came up. Follow-up questions were also made depending upon what was said in the interviews.

Besides the use of interviews, multiple sources of evidence like databases, master theses, newspaper articles, and annual reports were collected to strengthen the construct validity of the study. With the help of this secondary data, we also established evidence chains and found that the documentary evidence corroborated with the stories provided by the interviewees. Another test was to receive feedback on drafts of the cases.

To further increase the reliability of the study, we kept a detailed account of our activities in a research protocol, which included transcripts of the audiotape recordings from all of the interviews, transcripts of our field notes and observations, and transcripts of the secondary data. To minimize errors and biases in the study, two of the authors conducted the interviews at the investigated firms. The use of multiple researchers is useful both to enhance confidence in the findings (Eisenhardt, 1989) and minimize the likelihood of introducing bias into case studies (Yin, 2003).

### *3.2. Measurements*

Internationalization is measured by export share of turnover and resource commitment to foreign markets. We chose to use the measurement "export share of turnover" as it is in line with the commonly used measurements of internationalization applied in studies of small firms (Autio et al., 2000; Yli-Renko et al., 2002). Objective data of the firms' export shares of turnover from the years 2003 and 2005 was obtained from Statistics Sweden, which measures export shares in intervals (1-24 %, 25-49 %, 50-74 %, 75-100 %) (see Tables 2 and 3). This measurement, however, has its limitations. As the intervals are rough, we have to consider the possibility that the firms' export shares can vary within the intervals between the two years we have measured. If the turnover of a firm increases and the export share of

turnover stays the same, the actual foreign sales have increased. This would imply that the internationalization continues.

A firm's increased resource commitment to foreign markets is measured by a firm's movement from direct export to establishing cooperation with a foreign counterpart, to establishing a subsidiary on the foreign market (see Tables 2 and 3). This measure of increased commitment is in line with measures used in studies within the field of IP theory (Erramilli and Rao, 1990; Johanson and Vahlne, 1977; Johanson and Wiedersheim-Paul, 1975).

Foreign market knowledge is measured by knowledge about foreign counterparts (customers, customer customers, suppliers, distributors, competitors) (Blomstermo et al, 2004; Eriksson and Chetty, 2003) and a general experience of how to do business on foreign markets (Eriksson, Johanson, Majkgård and Sharma, 1997). A combination of actual financial capital and substitutes for financial capital was used for the measurement of financial resources. Apart from the financial capital generated from the company's sales, actual financial capital can include venture capital (Spence, 2003) and proceeds from an initial public offering (IPO) (Florin et al., 2003). Substitutes can include resources such as free equipment and facilities that would otherwise have needed to be funded by capital.

For the different dimensions of the individuals' social capital we have used previously accepted measurements (Presutti et al, 2007; Tsai and Ghoshal, 1998; Yli-Renko et al., 2002). The structural dimension is measured by who is included in the individual's network; academics, business people, venture capitalists and how these are reached through the network. Trust, trustworthiness and social interaction are used to measure the relational dimension of social capital. The cognitive dimension is measured by shared working background, experiences and frame of mind.

**Table 2**

The investigated biotech SMEs in 2003, at the beginning of the study.

Firm	Number of staff	Foreign-sales subsidiaries	Turnover (Thousands of USD)	Share of export (% of turnover)	Net profit/loss (Thousands of USD)
1	16	0	350	50-74	-3 381
2	13	0	922	25-49	-1 091
3	10	0	1 076	1-24	123
4	22	0	84	75-100	-4 648
5	7	0	933	1-24	-516
6	25	0	2 450	50-74	-494
7	12	0	0	0	-3 158
8	9	0	250	25-49	-1 469
9	90	5	11 950	50-74	-24 256
10	70	3	639	50-74	-28 048
11	29	0	2 012	0*	-2 725
12	19	0	2 756	75-100	-3 075
13	150	8	33 438	50-74	1 469
14	26	1	4 358	75-100	252

\* Because of significant changes in the customer base, company 11 does not have any export share in 2003.

**Table 3**

The investigated biotech SMEs in 2005.

Firm	Number of staff	Foreign-sales subsidiaries	Turnover (Thousands of USD)	Share of export (% of turnover)	Net profit/loss (Thousands of USD)
1*	-	-	-	-	-
2	11	0	1 554	1-24	-542
3	13	0	1 838	1-24	431
4	17	0	2 709	1-24	-5 472
5	5	0	1 060	1-24	-611
6	25	0	3 910	50-74	348
7*	-	-	-	-	-
8	14	0	439	25-49	-4 243
9	68	8	29 252	50-74	-3 200
10	54	3	826	1-24	-7 089
11	26	0	644	1-24	-2 120
12	36	0	8 955	50-74	-5 721
13	153	8	40 762	50-74	5 125
14	36	1	6 441	75-100	790

\* Because of bankruptcies, no financial information about firm 1 and 7 are available from 2005.

### 3.3. Analysis

A case study cannot be evaluated in terms of possibilities to statistically generalize its results. Instead, we have used analytic generalization (Kvale, 1996; Yin, 2003) to analyze the data from the 14 case studies. In such a validation, a previously developed theory is employed as a model with which the empirical results of a study are compared. The generalization is connected to the internal validity of the case, which is explanation building by the establishment of causal relationships (Yin, 2003). Yin (2003) mentions that moving back and forth between a proposition made and the empirical evidence is a characteristic of explanation building. It is a process of refining a set of propositions until all the data fit the refined propositions. Our initial propositions were general ideas about the importance of individuals and their personal networks, and that these would provide resources needed for the internationalization of biotech firms. In the beginning our

propositions did not match the data completely, so we had to reformulate them. We continued to move back and forth between the theory and data. The propositions were revised several times during the process, but were finally formulated into the concepts of social capital and its dimensions, FMK and financial resources and their effects on the firms' internationalization.

To make a cross case analysis we used cross-case synthesis (Yin, 2003). We found that each firm was in a different phase of its internationalization process. In addition, some of the founders of the firms had extensive experiences of and personal networks from working in industry settings, whereas other founders had experiences of and personal networks only from the academic world. By conducting an extensive empirical comparison of the 14 firms, we determined that they could be divided into three groups based on the structural dimensions of their social capital:

- Academic firms founded and managed by researchers from academia with predominantly academic experiences and networks. Companies 1, 2 and 3.
- Metamorphic firms founded by researchers but later changed as managers with business experiences and networks, were grafted to oversee international development. Companies 4, 5, 6, 7 and 8.
- Industrial firms founded and managed by individuals with both academic and business experiences and networks. Companies 9, 10, 11, 12, 13 and 14.

We start the cross-case analysis below, with indepth descriptions of the international development of one case from each of the three groups. Because the firms in each group have internationalized in a similar manner, these three case firms will represent the other firms in the same group. We chose the cases of Companies 1, 4, and 9 because these were the firms that can best illuminate the points that this analysis seeks to make (see Tables 4, 5, and 6). In this paper, the term useful social capital (mentioned in the tables) is defined as the kind of social capital that can provide the investigated firms with FMK and financial resources that ensures continued internationalization.

#### **4. Cases**

##### *4.1. An example of an academic firm: Company 1*

Company 1 develops and markets cost-effective ready to use test kits for different diseases. HIV/AIDS control is an important market for the firm. Company 1's products are based on the work of two researchers at Uppsala University. Between 1984 and 1996, Company 1 was located in Uppsala University facilities as the founders were still employed there. In 1996,

they were dismissed from the university, due to lack of funding, but brought their research equipment to a new location and continued to tutor doctoral students. This research team started to develop the firm. The structural dimensions of the founders' social capital were limited to people within academia. The founders of Company 1 used their structural, relational and cognitive dimensions to generate more capital, when they made a new share issue among friends and acquaintances. This shows that the actors in the founders' personal networks perceived the founders to be trustworthy.

After some time, Company 1 applied for and received financial support from a governmental institute and was able to construct a whole line of products, which they started to sell in 1997. The founders also met a venture capitalist who saw potential in their business and invested. When this individual later changed employer, this new venture capitalist firm also decided to invest in Company 1.

The main markets for Company 1's analysis kits are Africa, Eastern Europe, and Asia, where most people with HIV live. Company 1's employees sometimes found it hard to acquire knowledge about these markets, and it was, furthermore, almost impossible to buy structured market analysis. Because the founders had no international business experience, their social capital could not provide them with FMK, and they did not know how to connect themselves to those who had it. To deal with the challenging market situations in these countries, Company 1 often cooperated with a country's national actors. In Nigeria, the employees, for instance, cooperated directly with individuals responsible for the country's institute for infectious disease control.

#### *4.1.1. Company 1's internationalization*

Company 1 did not use a formulated strategy to find new customers. The firm showed the test kits all around the world but did not know which markets had the potential of being most profitable in the future. An important focus was to find people with the right connections. One of the founders said:

As a small firm, we cannot market ourselves everywhere. The firm is opportunity driven, and when persons find our products interesting, we have invited them to Uppsala. People from Azerbaijan, Ethiopia, Nigeria, and South Africa have come to Uppsala and been taught how to run the tests. (Excerpt from interview 04/03/2003)

The staff, furthermore, tried to do something outside of work with the invited customers. The founder believed that social activities increased the likelihood that customers would tell them about problems with the tests that may emerge later on. It was difficult for a resource-constrained, small company to afford educating everyone interested in its products. The employees tried to develop their social capital, by social interaction and showing themselves trustworthy in their relationships with customers. In that way they sought to increase their own FMK. There was, however, no guarantee that the potential customer relationships resulted in purchase and further internationalization.

#### *4.1.2. The progress of Company 1*

When Company 1 was first started, its founders were involved in every aspect of running the business. In time, the venture capitalists became more involved and used their employees' networks to find suitable external CEOs to manage the firm, thereby broadening the structural dimension of the employees' social capital. One of the founders was not satisfied with the work of some CEOs, the latest CEO being an exception. Conflicts between the original employees, the venture capitalists, and the external CEOs have disturbed potential benefits drawn from the cooperation. Because the external CEOs have not been directly involved in daily activities, a potential widening of the relational and cognitive dimensions of the employees' social capital has been hindered.

The other academic firms are similar to Company 1 in that all are based on staffs of researchers whom, in all dimensions, have limited social capital (see Table 4). Companies 1 and 2 show that their employees' social capital dimensions could not generate enough FMK or financial resources, and could consequently not support a continued internationalization. Company 1 lacked a solution to the problem of not having enough FMK. In 2005, Company 1's sales amounted to more than US\$1 million, but the firm's costs were significantly higher. The venture capitalists decided not to invest further, and Company 1 then went bankrupt at the beginning of 2006. Company 2's export shares have decreased between the years 2003 and 2005 and the company has not made any significant increase in resource commitments to foreign markets. In 2005, the company's losses have been reduced but the firm is still not profitable. The case of Company 3 (see Tables 2, 3 and 4), however, shows that academic firms can continue their internationalization by using FMK and financial capital acquired through the social capital of their employees. Company 3 has continued its internationalization, including an increase in turnover but still retains the same share of

export. The company also increases its profit between 2003 and 2005. One difference between Company 3 and the other companies in the study is that this company is a family-owned business. No venture capitalists pushing for faster internationalization are involved in the company. The founder states, “I do not feel any need to make the company into a large company with subsidiaries abroad” (Excerpt from interview 11/04/2003).

**Table 4**  
The Academic firms.

Beginning of their internationalization			
	Company 1	Company 2	Company 3
Structural dimension	Network is based on the founders' relationships within a strong academic network, but 1 has few relationships with industrial counterparts in foreign markets.	Similar to 1, but 2's founder works only part-time at the firm and has kept his job as head of research at a university department.	Similar to 1, but 3's founder was a scientific leader at a governmental institute before 3 started.
Relational dimension	Based on social interaction and trust in the personal research network.	Similar to 1. Many of the researchers that work in the firm are the founder's former Ph.D. students.	Similar to 1, but 3 is privately owned, and members of the founder's family work in the firm.
Cognitive dimension	A vast majority of the employees are researchers. They do not share professional backgrounds and frame of mind with their industrial counterparts or with the venture capitalists involved in the firm.	The firm's staff shares frame of mind and experiences with the interest organizations and research institutes with which 2 cooperates, but not with industrial counterparts in foreign markets.	A majority of 3's employees and many of the firm's customers are researchers. They share frame of mind and experiences. The employees do not share professional backgrounds with the more industrial counterparts in their network.
Acquisition of critical resources for internationalization?	The three dimensions together help 1 acquire some financial capital. FMK is acquired by trying to widen the relational dimension by social interaction with customers. Needs to accumulate more FMK	Similar to 1. The three dimensions together help 1 acquire some financial capital. Needs to accumulate more FMK.	The three dimension of social capital has provided resources that ensure the firm's continued internationalization.
Continued internationalization			
Useful social capital?	No, but the firm does not see the need to change its direction or present management, and continues as before.	Same as 1.	Yes. The company does not want to grow too much internationally.
Change to new social capital?	Only in the structural dimension through investment capitalists grafting of different external CEOs. No major changes due to lack of relational and cognitive dimension. There is limited trust and limited shared frame of mind between the external CEOs and the rest of the firm.	No major changes have occurred in management.	There is no major search for, or changes in, 3's social capital.
Acquisition of critical resources for internationalization?	No, the firm went bankrupt in the first quarter of 2006.	Not enough, but in 2004, one of 2's products became EU-approved. This enabled 2 to start marketing its products in new European markets and start to reduce the losses.	Yes, the three dimensions of social capital still provides enough critical resources to assure the firm's internationalization.

#### *4.2. An example of a metamorphic firm: Company 4*

Company 4 is built on the discovery of Multivital, a tooth-filling material based on a ceramic powder that works as a concrete for the teeth. During the initial years of the firm's existence in the late 1980's, Company 4's founder worked alone at the firm. The founder also worked part-time as a researcher at Uppsala University. His previous research experience included working as the head of research in both a ceramics trade organization and a ceramics firm. Even though the founder did not have much FMK, he considered his background in the academic world to be of great importance for the development of Company 4, as potential customers could trust the research. It also provided him with resources. An agreement between Company 4 and Uppsala University enabled Company 4 to utilize the university's equipment and facilities, providing the company with necessary resources for the start-up. This use of the structural dimension of the founder's social capital, in the shape of academic networks, is typical for all of the metamorphic firms in the study (see Table 5).

Eventually, these resources were not enough for the firm's growth, and in 1997, a new share issue was made. Most investors were personal acquaintances of the founder, making the acquisition of financial capital a result of the founder's structural, relational and cognitive social capital dimensions. As a result, Company 4 could afford to move into its own premises and employ staff. The founder was also able to retreat from his role as CEO and become head of R&D. The new staff came from his personal network in the academic world and brought no significant increase in FMK.

##### *4.2.1. Company 4's internationalization*

In 2000, Multivital became certified and could be sold in European markets. Since the time of the new share issue, the management had continuously presented Company 4 to venture capitalists. However, because of the limited structural and cognitive dimensions of the management's social capital, it was difficult for the management to attract the interest of other venture capitalists (i.e., they had few relationships with business people and did not understand venture capitalists' way of thinking and frames of mind). Still, in 2000, the management was able to initiate relationships with larger venture capitalists who believed in the product. These relationships provided the firm with the needed financial resources for internationalization.

#### *4.2.2. The progress of Company 4*

The new investors wanted a change in management and used the structural dimensions of their social capital to recruit a new CEO. The new CEO was an old colleague of one of Company 4's investors and chairman of the board, which indicates a strong presence of the relational dimension. This CEO had vast experience in international operations from his previous employment at a multinational pharmaceutical firm. The strategy was to use his FMK to build up a large market and sales department, which would first focus on the Scandinavian market and later continue with other European countries. As a result, Multivital was launched in Norway, Finland, and Denmark in 2001.

In 2002, after Multivital's Scandinavian launch, the CEO started to review the sales figures for Sweden. He discovered that only a few of the dentists who tried Multivital had repurchased the product. A market survey showed that the dentists believed that the filling material was difficult to work with and that the result looked unnatural. The CEO stated that he wanted to terminate the further international launch of Multivital. The board agreed, and the introduction of Multivital outside of Scandinavia was postponed. The limited structural and cognitive dimensions of the previous managements' social capital had led to an oversight in product development because of missing feedback from customers. Because the employees did not share working backgrounds with their customers, their cognitive dimension of social capital could not help them acquire market knowledge. The employment of the new CEO widened the structural and cognitive dimensions of the social capital accessible to the firm. The business experience of the CEO facilitated the development of relationships with customers as he "spoke their language." Similar processes can also be seen in the other metamorphic firms (see Table 5). All dimensions of social capital was widened by the investors' business networks and through new managements, recruited via those networks. The new managements also provided the FMK that the firms needed.

The launch postponement was a setback for Company 4. The main market for dental products is the U.S.; therefore, it was important to learn about the needs of American customers as quickly as possible. For this reason, the CEO set up a task force. He described the task force as follows:

The task force consists of consultants and other professionals in my own or the board members' networks. ... One person was picked for his knowledge about the U.S. market; another had worked his whole life in the dental business and

had significant knowledge about this business. (Excerpt from interview 10/06/2003)

The task force's main objective was to come up with a business plan for launching Multivital in the U.S. The task force concluded that it would be too expensive for Company 4 to launch Multivital in the U.S. by itself and that some kind of partner should be found. In sum, the CEO's solution to Company 4's lack of FMK was to use his social capital's structural, relational and cognitive dimension to create a task force. The task force's solution to find a partner suggested that Company 4 would get the needed financial resources and FMK by developing the structural dimension of the individuals' social capital. Similar behaviors are visible in all the metamorphic firms (see Table 5). For example, the founders of both Companies 4 and 5 decided to look for partners instead of commencing with their original plans to handle the international marketing themselves. The introduction of a new management with FMK does not necessarily lead to an improvement of a firm's finances and internationalization. None of the metamorphic firms have increased their export shares between the years 2003 and 2005.

At the end of 2004, the work of the new CEO and the task force resulted in a deal being made between Company 4 and a large partner in the dental business, thus making Company 4 the only metamorphic firm that significantly increased its resource commitments to foreign markets. This deal provided Company 4 with a new source of financial resources as the exclusive right to develop, manufacture, and commercialize the second generation of tooth-filling material was sold.

All of the metamorphic firms, except Company 6, still incur losses in 2005. Company 7 has been forced to file for bankruptcy. However, the metamorphic firms' grafting of managers demonstrates that these firms realized that the lack of FMK and financial resources prevented their continued internationalization. Company 6 has been very successful in its grafting of a new CEO. The social capital of the CEO and the resources it brought has helped the firm to increase its turnover and keep the same share of export. The company has, moreover, had a large increase in profit.

**Table 5**  
The Metamorphic firms.

Beginning of their internationalization					
	Company 4	Company 5	Company 6	Company 7	Company 8
Structural dimension	Network is based on the founder's relationships from the university. Strong academic network but few relationships with industrial counterparts.	Same as 4.	Similar to 4, but 6 is a spin-off from a governmental research institute.	Similar to 4. One founder was a university researcher and the other an entrepreneur with his own business, before they started 7.	Similar to 4, but 8 also has some relationships with industrial counterparts.
Relational dimension	Based on social interaction and trust in the personal research network.	Same as 4.	Same as 4.	Same as 4. The two founders are close relatives.	Same as 4.
Cognitive dimension	Employees do not share professional backgrounds and experiences with industrial counterparts or venture capitalists involved with the firm.	A majority of the employees and many of the firm's customers are researchers. They share frame of mind and similar experiences. The employees do not share professional backgrounds with industrial counterparts in the network or venture capitalists.	Same as 4.	Same as 4.	The employees share experiences and frame of mind with the research institutes to which they sell. Some employees also share experiences with industrial counterparts connected to the firm.
Acquisition of critical resources for internationalization?	The three dimensions jointly help 4 acquire financial capital. Not enough FMK because of limited structural social capital.	Same as 4.	Same as 4.	Same as 4, but has problems with the acquisition of customers.	Same as 4.
Continued internationalization					
Useful social capital?	No.	No.	No.	No.	No.
Change to new social capital?	In 2000, a CEO with industrial experience is grafted by 4's new investors. With them the structural, relational and cognitive social capital of the firm is widened to an industrial network; including social interaction, trust, shared experiences and backgrounds.	Similar to 4. A CEO is grafted in 2003.	Similar to 4. A headhunter is used to graft a CEO in 2001.	Similar to 4. A new management team is grafted in 2001.	Similar to 4. A CEO is grafted in 2004.
Acquisition of critical resources for internationalization?	Not yet, found large partner but still incurs losses and needs to accumulate more FMK.	Not yet, the new CEO is still searching for a larger partner with which to cooperate.	Yes, 6 has succeeded in turning the business around, and has enough resources for continued internationalization.	No, the customers derived from the new management's network were not sufficient. 7 went bankrupt in 2003.	Same as 4.

#### *4.3. An example of an industrial firm: Company 9*

In 1996, a research group in Stockholm made a breakthrough. They created a system that allowed fast analysis of DNA samples. The research group contacted one of the world's largest pharmaceutical companies, which resided in Uppsala, to start a project around the new system. In 1997, the involved managers and the researchers founded Company 9, with the mission to develop, manufacture, and sell tools for genetic analysis. In 1999, Company 9 started to sell its first generation of products. Because 98% of the market was outside of Sweden, the firm had an international outlook from the start. Most of Company 9's management and the employees they hired were old colleagues and friends who had previously worked at the large pharmaceutical company, which indicates strong relational dimension in the founders' social capital. The employees had previously participated in international expansions and had well-developed personal networks in both the Swedish and foreign parts of the business. The other industrial firms described a similar use of social capital's structural and relational dimension to acquire FMK (see Table 6). In addition to experience from working within the life science industry, a majority of the employees had also an academic background, which offered great breadth in their social capital's structural dimension.

The new technologies that Company 9 and the other industrial firms were built around were well known to researchers. This, together with the experienced management, made the firms trustworthy to investors. Those industrial firms that acquired venture capital used the relational dimension of the management's social capital. The managers also shared similar experiences and frames of minds with the venture capitalists, which imply a strong presence of the cognitive dimension. In sum, the structural, relational, and cognitive dimensions of Company 9's management team's social capital led to investments of about \$12 million from Swedish and foreign investors during the first year. Venture capital investments also got most of the other industrial firms started (see Table 6). In this respect, Company 13 and 14 are different from the other industrial firms because they have not used venture capital for their internationalization.

##### *4.3.1. Company 9's internationalization*

All of the industrial firms utilized their employees' FMK in the beginning of their internationalization to strategize and plan for their expansion. Company 9 followed a clear strategic plan that was based on the FMK of the marketing manager and the CEO. The strategy

stated that the firm should establish its own sales subsidiaries in the most important geographical markets and let distributors manage the rest of the world. This strategy required significant resource commitments, and more capital was needed. The owners and management decided to introduce Company 9 to the stock market in 2000. Because of the trustworthiness of the management and the owners, the IPO generated about \$127 million, which shows that the relational dimension of the individuals' social capital had a strong effect on the acquisition of financial capital.

The main reason for following the international strategy was that it enabled the employees to manage the relationships with its most important customers, which were academic customers. The marketing manager explained this strategy as follows:

Our firm has to be in the frontline of research and development to be able to produce competitive products, and this can only be done by being close to the customers. ... We must be able to know right away what works and what doesn't. (Excerpt from interview 12/03/2003).

This relationship-building with customers was a mean to evoke trust from their most important customers. They searched their personal networks for relationships that would provide the FMK needed to facilitate their entry into target markets; thus, they used their social capital's structural dimension to acquire FMK needed for the internationalization. The marketing manager commented:

... my own and the other employees' networks have been used to find distributors and customer contacts in foreign markets... The network contacts are of great importance when we need to find the right person to contact in a firm, when we need to obtain an audience. (Excerpt from interview 12/03/2003)

The firm's employees utilized the relational dimension of their social capital to find distributors and customers, which shows that the relational dimension was very useful when the employees needed to find firms and persons they could trust.

The management of Company 9 was convinced that the employees in the foreign subsidiaries had to be selected from the local markets in order to be successful. The management's FMK taught them that it was necessary to hire local staff not only to prevent confusion in customer relationships (regarding language and culture) but also to acquire knowledge about local personal networks in new foreign markets. This method of acquiring more FMK, through the structural and cognitive dimensions of the local staff's social capital, was perceived by the industrial firms as an efficient way to internationalize. All of the

industrial firms with their own sales subsidiaries (see Tables 2 and 3) chose to employ local staff in their subsidiaries.

#### *4.3.2. The progress of Company 9*

From the beginning, the management of Company 9 was aware that the first years of business would demand a great amount of capital because biotech SMEs are traditionally loss-making companies for a significant period of time before they start to make a profit. As time passed, however, it became evident that although Company 9 had a large amount of capital to spend, the firm's profitability was not increasing enough.

In 2003, Company 9 decided to buy two other companies in order to extend its product portfolio and create benefits from synergistic effects. When Company 9 bought the second company, the management of Company 9 was changed because the largest owners believed the old management had been too focused on conducting research and not enough on making a profit. The new management consisted of individuals from the largest owners' networks. Today, Company 9's range of products derives from three market-leading companies in three related areas. The product line that is derived from the old company amounts to only 15% of the present product offerings. The new management decided that a shift in customer focus was necessary for this product group. Instead of focusing on academic customers, the new management chose to target customers that are less dependent on research grants. This new strategy has already led to acquisition of financial resources in this product area in the form of royalties of about \$1 million a year.

Table 6 shows that the social capital of the first four industrial firms has not provided enough resources to ensure continued internationalization for these firms. The original managers of these firms misjudged either their products' appeal to foreign markets or the size and scope of these markets. These firms had not acquired the FMK needed and, therefore, decided to graft new CEOs, or alternatively new management teams, with new structural, relational and cognitive social capital in order to rectify this problem. Even though Companies 9, 10, 11, and 12 grafted new employees with new social capital, this did not necessarily lead to continued internationalization of the firms. In the cases of Company 10 and 12, a reduction in export shares between the years of 2003 and 2005 has occurred and these firms have made no additional resource commitments to foreign markets. Company 9 made additional resource commitments by establishing three new subsidiaries on foreign markets, related to the companies that the firm bought. Company 9's increase in turnover and

stable export shares, also relates to the merger. Company 11 shows increase in its export shares, because of the change in market focus (see table 6). In the cases of Company 13 and 14, the situation is the opposite because these firms' management's structural, relational and cognitive social capital is still useful and their level of FMK and financial resources are adequate for continued internationalization. Therefore these firms do not see any reason to change management. The founder of Company 14 relates that when his firm was started in the early 1990s, he planned to obtain a bank loan of about US\$ 600,000. He was, however, only allowed to borrow about \$30,000. As a consequence, Company 14's international expansion was delayed. The founder commented:

Looking back, I can see that the firm developed more slowly than I expected, but this has not necessarily been a disadvantage. We cooperate with some other biotech firms that have received large amounts of venture capital. I believe that some of these got too much money and lost the sense of what costs really mean.  
(Excerpt from interview 16/04/2003)

Companies 13 and 14 have experienced a continued internationalization where increases of resource commitments to foreign markets have been governed by their sales of the firms' own products. Company 13 has in 2005 committed more resources by complementing one of its sales-subsidiary with a manufacturing subsidiary. Company 14 has during 2003 opened one sales subsidiary abroad. Even though these firms have made additional resource commitments to foreign markets between the years 2003 and 2005, there is no change in these firms' already high export shares. Both firms have, however, increased their profit during this time period.

**Table 6**  
The Industrial firms.

Beginning of their internationalization						
	Company 9	Company 10	Company 11	Company 12	Company 13	Company 14
Structural dimension	Network is based on the employees' relationships from previous employment at other multinational companies but also on relationships from their research backgrounds	Same as 9.	Similar to 9, but network is based on the employees' relationships made in firms within the life science sphere.	Same as 11.	Network is mostly based on one of the founder's business and research relationships from his first firm.	Similar to 9, but 14 also builds foreign relationships by participating in student-exchange programs.
Relational dimension	Based on social interaction, trust and trustworthiness between members of the network.	Same as 9.	Same as 9.	Same as 9.	Similar to 9, but 13 has not used venture capital to finance its internationalization.	Same as 13.
Cognitive dimension	The employees and their counterparts share frame of mind and experiences.	Same as 9.	Same as 9.	Same as 9.	Same as 9.	Same as 9.
Acquisition of critical resources for internationalization?	The three dimensions jointly help 9 acquire venture capital, and FMK through grafting. The IPO is an outcome of the relational dimension. Needs to accumulate more FMK.	Same as 9 but only acquire venture capital.	Same as 10.	Same as 10.	One of the most profitable firms in the region. Grows incrementally and has presently enough financial capital and FMK for continued internationalization.	Same as 13.
Continued internationalization						
Useful social capital?	No. The three dimensions of social capital is not useful enough	No.	No.	No.	Yes.	Yes.
Search for new social capital?	In 2003, an experienced management team is grafted, and the hope is that its new structural, relational and cognitive social capital will help the firm acquire FMK and financial resources.	Similar to 9. An experienced management team is grafted in 2004.	Similar to 9. 11 decides to focus its sales efforts on the diagnostics market. A new CEO with experience from this business is grafted in 2003. Thus widening the structural, relational and cognitive dimensions	Similar to 9. An experienced CEO is grafted in 2004.	There is no major change in social capital.	Same as 13.
Acquisition of critical resources for internationalization?	Not yet, but the losses have been reduced. The firm still needs to accumulate more FMK.	Same as 9.	Same as 9.	Same as 9.	Yes, 13 has enough critical resources to ensure its continued internationalization	Same as 13.

## 5. Conclusions

Behavioral internationalization process theory emphasizes the firm as the unit of analysis (Eriksson et al., 1997; Johanson and Vahlne, 1977) however our study contributes to internationalization theory by showing that it is imperative to include the influence of individuals when focusing on high-tech SMEs' internationalization.

In the beginning of this study we discussed four propositions. All of these are validated. As stated in proposition 1; the structural dimension of the individuals' social capital affects the firms' acquisition of FMK and financial resources, which can be seen in all of our 14 cases. Depending on who is included in the network, the structural dimension can either have a positive or negative effect. Our study shows that lack of industrial connections, in the individuals' networks hinders the companies' acquisition of financial resources and especially acquisition of FMK. This is typical for two of the Academic firms (Companies 1 and 2) and all of the Metamorphic firms. It seems that the most common way to get FMK is through connections to individuals with experience of foreign operations. The structural dimension of the individuals in the Industrial firms' includes business people, which ensure them FMK.

Proposition 2 is also validated; the relational dimension of the individuals' social capital affects the acquisition of FMK and financial resources. The trust and social interaction among members of the individuals' networks provides the firms with FMK and financial resources, which is common for all of the Industrial firms. Although less social interaction and trustworthiness will hamper the ability to reap rewards from individuals' social capital which is shown in two of the Academic firms (Companies 1 and 2) and all of the Metamorphic firms in the beginning of internationalization.

The cognitive dimension of the individuals' social capital has an effect on the acquisition of FMK and financial resources, which validates proposition 3. For the Industrial firms, shared working background, frame of mind and experiences all contribute to the ease of resource acquisition. A limited cognitive dimension of individuals' social capital hampers the acquisition of FMK but it especially hampers the financial capital for the academic and metamorphic firms, since their managements cannot understand the venture capitalists.

This study shows that the different social capital dimensions are closely intertwined and that all dimensions are needed to acquire FMK and financial resources. As seen in the case of Company 1, a widening of the structural dimension is not enough. If there is no trust and no common frame of mind between members of the network there is no major effect on the acquisition of FMK and financial resources. This is also true for company 2. On

the other hand, Company 3 has acquired critical resources from academic counterparts, which has ensured its continued internationalization.

A general analysis of all of the 14 firms shows that the wider the structure of the individuals networks, the more trust and social interaction within that network, and the more common background and frame of mind between members, the more financial capital and FMK the firms will acquire. Contradictory, Presutti et al. (2007) found that only the structural dimension of social capital is positively related to knowledge acquisition for international firms. We believe that our results depend on us following the firms' internationalization and learning processes more longitudinally, which gives a more comprehensive picture. Also our study differentiates between academic, metamorphic and industrial firms. If only one type of firm was studied, the importance of the cognitive and relational dimensions of social capital might be decreased.

Proposition 4 concerning the effect of FMK and financial resources on the internationalization process is validated. If a firm acquires, through individuals' social capital, necessary FMK and financial resources this will have an effect on the firms' level of commitment and export share of turnover. In our study we have four such firms; 3, 6, 13 and 14 (see tables 2, 3, 4, 5 and 6). However, in the dynamic, rapidly changing markets in which biotech SMEs operate, there are challenges connected to the usefulness of individuals' social capital. For instance, the usefulness of social capital often changes during a biotech firm's internationalization. Our cases show that depending on the firms' ability to understand when existing social capital is useful and when they need to find and change to new more useful social capital, their internationalization is more or less successful. For instance, two of the academic firms (Companies 1 and 2) do not realize the need to expand the social capital to industrial counterparts who can provide FMK and financial resources (see Table 4), and thus their internationalization is hindered. Company 1 went bankrupt in 2006 and company 2 is still struggling.

The metamorphic firms are characterized by having more developed structural, relational, and cognitive social capital dimensions because all of these firms came to realize that their existing social capital was not as useful as perceived and that new social capital was needed to continue their internationalization. CEOs and/or management teams with business experience of the biotech industry were grafted to complement the employees' academic networks. These actions develop all the dimensions of social capital toward industrial actors

(see Table 5), which increases their FMK and financial capital. However, most of them still do not have enough resources to proceed with their internationalization.

Our study offers an interesting contribution to the debate regarding the pace of the internationalization process. We find that biotech SMEs' use of key individuals' social capital can contribute to a rapid internationalization, which supports prior research findings (Autio et al., 2000; Rialp, Rialp and Knight, 2005). However we also find evidence for that the most rapid internationalization is not necessarily the most successful. The FMK and large amounts of venture capital that four of the Industrial firms (Companies 9, 10, 11 and 12) acquired from the individuals social capital enabled them to expand rapidly in several foreign markets with high commitment modes (in the cases of Companies 9 and 10), but this did not result in successful internationalization in the long run (see Tables 1, 2, 3 and 6). Moreover, between the years of 2003 and 2005, Companies 10 and 12 have experienced an international contraction as export shares have been reduced. The Metamorphic firms did not commit to the foreign markets but had high export shares early on (see tables 1, 2, 3 and 5). The pressure from venture capitalists and owners to generate profits fast, gave the firms' management teams neither leverages nor time. When the initial internationalization strategies failed four of the Industrial and all of the Metamorphic firms, grafted new management teams and/or CEOs to rectify the problems. But the firms' internationalization still remained unsuccessful. We argue that the rapid internationalization hampered the possibilities of making cause and effect analyses about what was incorrect (Huber, 1991; Johansson and Vahlne, 1977) and was thus an impediment to these firms' acquisition of useful FMK (Autio et al., 2000; Sharma and Blomstermo, 2003).

The straightforward relationship between knowledge acquisition and firm behavior in the IP model has been criticized (Forsgren, 2002). Whereas organization-learning literature has highlighted that the connection between learning and performance is far from apparent (Levinthal and March, 1993), this is not discussed in the IP model. Levitt and March (1988) contributed to the understanding of problems connected to knowledge acquisition by developing the concept of superstitious learning. They define superstitious learning as occurring when the subjective experience of learning is compelling but the connections between actions and outcome are misspecified (Levitt and March, 1988, p. 325).

We find that the risk of superstitious learning is high, when a biotech SME believes that the social capital and FMK of founding or grafted individuals can result in fast and successful internationalization in a specific foreign market. This means that the decision

makers of the firm believe that they have the right or enough FMK to proceed, but actually lacks the necessary knowledge needed for internationalization.

In contrast, the two industrial firms that acquired the critical resources to continue internationalization and generate profits in 2003 and 2005 have not used grafting as a form of acquiring FMK. Also much of their financial resources came from the sales of the firms' own products which gave them an incremental internationalization and time to acquire useful FMK. Accordingly it is the biotech SMEs experiencing incremental internationalization (Companies 3, 6, 13 and 14), thus fostering an incremental acquisition of FMK that are the most successful, with increasing turnover, the same or higher export shares and higher profits.

By focusing on grafted individuals' FMK, instead of the firms' own, the possibilities for implementing newly acquired knowledge from failed internationalization strategies is neglected when social capital is changed. The grafted individuals often have experience of managing successful, but often larger, international enterprises in the past. The results of this study suggest that these individuals' FMK might not be useful for the resource-constrained SMEs. Instead our study indicates the necessity of integrating grafted individuals' social capital with the biotech firm's social capital. Our findings contribute to the development of findings by Eriksson et al. (1997), who found that the FMK important for an internationalizing firm consists of both market-specific knowledge and internationalization knowledge. Whereas internationalization knowledge is a more general knowledge about how to internationalize, market-specific knowledge cannot be transferred between different markets and can only be acquired by operations in a firm's network. The development of social capital in relation to the specific, and often rapidly changing market conditions in which biotech SMEs operate, is indispensable for acquisition of much needed resources. Consequently, grafted individuals' social capital, and more general internationalization knowledge, needs to be adapted to and incorporated into biotech SMEs' social capital; their resources and networks of specific customers and partners in international markets, in order to yield results. Company 6, the only successful metamorphic firm in our sample, managed this process when grafting a new CEO. An implication of our research is that to become successful, biotech SMEs and their management teams need to understand that the acquisition of useful FMK and financial recourses depend on their social capital, and that this needs to be tailored to the firms' current situation.

## 6. Limitations and future research

Because of the limitations of time and space, this study focused on the prior experiences of key individuals in biotech firms and the theoretical concept of social capital. Other factors that might have influenced the various internationalization patterns of the biotech firms, such as the impact of the key individuals' motivations or personality traits, have thus been disregarded in this study. Future research that includes these aspects could increase the knowledge of and insight into these kinds of firms.

This study has used a qualitative, longitudinal, multiple-case-study approach to examine the effects of individuals' social capital dimensions on biotech SMEs' acquisition of FMK and financial resources in their internationalization processes. The narrow scope of this study, which focused on internationalizing biotech SMEs in one cluster of one country, does not permit broad generalizations to be made. Comparative studies that focus on non-internationalizing firms could, therefore, be useful to further our knowledge about the real effects of financial resources and social capital on the internationalization of firms.

Furthermore, the qualitative data presented has not allowed for any econometric studies to be performed. Therefore, conducting quantitative studies in the future, from which wider generalizations can be derived, may prove useful.

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## ARTICLE 4

### **The acquisition of foreign market knowledge – A high-tech SME's usage of ICTs**

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## **The Acquisition of Foreign Market Knowledge - A High-Tech SME's Usage of ICTs**

**Sara Melén**

### **Introduction**

In order for a company to internationalise, the accumulation of knowledge about foreign markets is a crucial process. The lack of foreign market knowledge, as for example a lack of knowledge in foreign markets and foreign customers, is regarded as an obstacle in the company's internationalisation (Johanson & Vahlne, 1977; Eriksson, Johanson, Majkgård, & Sharma, 1997). For small, entrepreneurial companies that sell high-technological products in new, emerging and specialised niche markets, international business is often a crucial consideration from the first day of a company's establishment, or soon thereafter (Crick & Jones, 2000; Yli-Renko, Autio, & Tontti, 2002; Saarenketo, Puumalainen, Kuivalainen, & Kyläheiko, 2003; Sharma & Blomstermo, 2003; Melén, Rovira, & Sharma, 2004; Rovira, Melén, & Sharma, 2005). The process of acquiring foreign market knowledge is, therefore, an important but also challenging process for these companies, when a company must start to acquire knowledge about foreign markets soon after it is established.

Prior studies of small and medium-sized enterprises' (SMEs<sup>1</sup>) internationalisation, and in particular SMEs operating in high-tech businesses, such as software and biotech, have demonstrated the importance of a company's network of relationships (Coviello & Munro, 1997; Madsen & Servais, 1997; Coviello & McAuley, 1999; Chetty & Blankeburg Holm, 2000; Ellis, 2000; Yli-Renko et al., 2002; Saarenketo et al., 2003; Sharma & Blomstermo, 2003; Melén et al., 2004). The network of relationships, such as relationships to customers, suppliers, partners and competitors, can provide an SME with important foreign market knowledge. Prior studies of small, high-tech companies that start to operate in international markets from the first day of their establishment, have demonstrated that foreign market knowledge is acquired in the company's interaction with its foreign customers (Sharma & Blomstermo, 2003; Rovira et al., 2005). This study will expand on this research by means of a more in-depth study of a high-tech SME's acquisition

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<sup>1</sup> The Swedish national entrepreneurs' federation defines small and medium-sized enterprises (SMEs) as enterprises with 1-199 employees.

of foreign market knowledge, in its interaction with existing and new customers in a foreign market. In this study, a high-tech SME is defined as a knowledge-intensive SME that sells high-technological new products in emerging, international and often specialised niche markets (Crick & Jones, 2000; Saarenketo et al., 2003)<sup>2</sup>.

When studying an SME's interaction with foreign customers, a factor that has come to influence an SME's opportunities for doing business and interacting with foreign partners, is its usage of Information and Communication Technologies (ICTs) (Hamill, 1997; Hamill & Gregory, 1997; Moen, 2002; Sadowski, Maitland, & van Dongen, 2002). This factor must, therefore, be considered in this study. In analysing SMEs' usage of ICTs, some studies only refer to a single element of ICTs, such as the usage of e-mail or the Internet (Moen, 2002), while other studies are more ambitious in studying a fully spectrum of ICTs, such as audio/videoconferencing, CD-ROM, Web-based communication etc. (Sinkovics, Bell, & Deans, 2004). In a report<sup>3</sup> by the Swedbank Föreningsparbanken and the Federation of Private Enterprises in Sweden, Sweden's small companies were asked about their usage of the Internet. The results demonstrated that small companies used Internet most often for communication (e-mail) and searching for information. The findings also showed that companies that were dependent on export used Internet to a higher extent than the domestic oriented companies. Based on the result of this report and prior studies on SMEs' usage of ICTs, a high-tech SME's ICT usage will be considered as searching the Internet for international information or using e-mail as a communication medium with customers and partners.

The purpose of this study is, therefore, to analyse how a high-tech SME acquires foreign market knowledge in its interaction with existing and new customers within a foreign market. In doing so, a high-tech SME's usage of ICTs will be considered and this study, thereby, contributes to the research of the Internet's impact on international business, which is an area where more research is required (Petersen, Welch, & Liesch, 2002).

In defining foreign market knowledge, Eriksson et al.'s (1997) definition of experiential market knowledge is used as a point of departure. These authors define foreign business knowledge as experiential knowledge of clients, the market, and competitors (Eriksson et al., 1997, p. 343). In analysing

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<sup>2</sup> Within the literature, these kinds of companies have been given several names, such as Born Globals (Sharma & Blomstermo, 2003) and Born Global SMEs (Melén et al., 2004; Rovira et al., 2005).

<sup>3</sup> The report, "Småföretagsbarometern", has investigated companies with one to 49 employees. [http://www.foretagarna.se/pdf/BAR\\_Vt\\_2004/EU\\_Internet.pdf](http://www.foretagarna.se/pdf/BAR_Vt_2004/EU_Internet.pdf)

a high-tech SME's acquisition of foreign market knowledge, this study focuses on the acquisition of knowledge about foreign clients and a foreign market.

For the purpose of this study, a case study of a small Scandinavian biotech company has been conducted. The company produces and sells specialised niche products in international markets and is defined as a high-tech SME. The study is limited to the company's interaction with existing and new customers within a specific foreign country market.

The chapter starts with a short literature review of SMEs' internationalisation. The characteristics of knowledge and its acquisition are then discussed. An analysis framework for studying a high-tech SME's acquisition of foreign market knowledge, in its interaction with its foreign customers, is outlined at the end of the theoretical part. After describing the research methodology and data collection, the empirical findings are presented and discussed. Finally, concluding remarks, future research and managerial implications are presented.

### **The Internationalisation of SMEs**

The theoretical part starts with a short review of prior studies in SMEs' internationalisation and how SMEs use ICTs. The aim of the review is not to summarise all the studies that have been written within the area, but to draw some conclusions about SMEs' internationalisation and how these companies acquire knowledge about foreign markets.

#### ***The Importance of SMEs' Network of Relationships***

In order to understand the internationalisation process of small, often resource-constrained companies, researchers have found network theories to be successful (Coviello & Munro, 1997; Madsen & Servais, 1997; Coviello & McAuley, 1999; Chetty & Blankeburg Holm, 2000; Ellis, 2000; Yli-Renko et al., 2002; Saarenketo et al., 2003; Sharma & Blomstermo, 2003). From the relationships to foreign customers, suppliers, and distributors etc., these companies are able to acquire important knowledge about markets abroad (Coviello & Munro, 1997; Chetty & Blankenburg-Holm, 2000; Ellis, 2000; Sharma & Blomstermo, 2003). The knowledge that is acquired can be exemplified by knowledge of opportunities in foreign markets (Ellis, 2000) and knowledge of foreign business partners' needs and demands (Blomstermo & Sharma, 2003).

For SMEs that produce a high-technological product and operate in international niche markets, often directly after the company is founded, prior studies have indicated that the network of relationships might play an even

more decisive role for the company's ability to engage in foreign businesses (Saarenketo et al., 2003; Sharma & Blomstermo, 2003; Melén et al., 2004; Rovira et al., 2005). Saarenketo et al. (2003) argue that a rapid internationalisation requires rapid learning, and this is partly enabled by the company's increased use of partners and networks. Sharma and Blomstermo's (2003) theoretical study of small knowledge-intensive companies that start to engage in international operations from the first day of their establishment, emphasises that the internationalisation process of these companies is driven by the knowledge supplied by the company's network. More specifically, Sharma and Blomstermo (2003) describe that a company selling a product that is high-tech and new in the market might need to teach its customers how to use the product. Due to the customers' need for knowledge on the product, its uses and its reliability, a direct contact with the customers is achieved. These feedback processes provide the small, knowledge-intensive and rapidly internationalising company with new knowledge of foreign clients and markets. Sharma and Blomstermo (2003), therefore, emphasise this two-way flow of information between a high-tech company and its customers. Supporting the findings of Sharma and Blomstermo (2003), Rovira et al. (2005) also demonstrate that the feedback provided by a company's customers has given the small, high-tech company important knowledge about the foreign customers.

So, prior studies have indicated that high-tech SMEs acquire important foreign market knowledge in their network relationships, and the interaction with foreign customers is one of these important network relationships.

### ***SMEs' Usage of ICTs***

When arguing that a high-tech SME's interaction with foreign customers is important for the company's acquisition of foreign market knowledge, a factor that has come to influence an SME's opportunity for interacting with foreign network partners is its usage of ICTs. Several studies have emphasised the new opportunities that have come with ICTs, and how these technologies can facilitate small companies in their internationalisation process (Hamill, 1997; Hamill & Gregory, 1997; Poon & Swatman, 1997; Moen, 2002; Spence, 2003; Saarenketo et al., 2003). ICT is shown to facilitate small companies' search for information about the international market (Moen, 2002), and communication with foreign customers and partners (Hamill, 1997; Hamill & Gregory, 1997; Poon & Swatman, 1997; Sadowski et al., 2002). Authors point out that information can now be distributed at an almost costless expense (Madsen & Servais, 1997; Pedersen et al., 2002). Poon and Swatman (1997) found that

small Australian companies perceived the key function of the Internet as being a medium for human communication. To accomplish this communication e-mail was used, primarily to communicate with customers and business partners. In contrast to telephone and fax, e-mail could overcome both time and geographical limitations. These advantages of using e-mail for communication were also emphasised in a study by Sinkovics et al. (2004), who describe e-mail as a technology that enables efficient, quick, well-documented communication and is particularly useful for cheap, long-distance communication across international boundaries and time zones. Sinkovics et al. (2004), therefore, state that for international entrepreneurs, e-mail can improve the communication with network partners and contribute to a faster response to and from clients, prospects and suppliers. In a study of the Internet and international marketing, Moen (2002) found that the companies using information technology intensely in support of their export activities were young, in the sense of being relatively newly established, operating in growth markets, and were extremely niche focused and technologically advanced. Moen (2002), furthermore, found that several of the SMEs in his study considered it important to be able to keep in intensive contact with agents/distributors, and customers in export markets. ICTs were then used to support and strengthen these relationships. In another study by Moen, Endresen, and Gavlen (2003), the small software companies that were studied were using the Internet extensively for support and post-purchase activities. These activities and the Internet were important for small software firms in order to generate trust and long-term relationships. In support of Moen's (2002) findings, Quelch and Klein (1996) highlight the opportunities that the Internet has given small companies offering specialised niche products, as the Internet enables these companies to find their critical group of customers in the world. The authors point out that the Internet will facilitate both finding markets for new products and developing products for new markets. New product announcements on the Internet can generate immediate demand, and the Internet's new communication capabilities might speed the local adaptation and customization of products. In contrast to these arguments, Moen et al. (2003) argue that the Internet is not suited for marketing and promoting more complex and customised software. They find, rather, that inexpensive and standardised software is most suited for purchasing over the Internet.

In sum, prior studies of SMEs' usage of ICTs indicate that the Internet and e-mail can facilitate a high-tech SME's interaction with foreign customers.

### **Knowledge and Information – How Can It be Acquired?**

In order to study a high-tech SME's acquisition of foreign market knowledge, the question of what knowledge is about and how it can be acquired, must first be discussed. In doing so, some attention will be paid at the start to the area of knowledge management. Within this research area, definitions of knowledge, information and data are a central issue.

Van Beveren (2002) is one of the researchers who discuss what knowledge is about and what differentiates knowledge from information. In doing so, he starts by defining data as raw facts (Van Beveren, 2002, p. 19). Information is then created when the data is given some context (Van Beveren, 2002, p. 19). Within an international business context, information is, for example, data about the number of potential clients in a specific country market. But in order to be able to make inferences from the information, to understand and interpret it, a person needs skills, experiences, beliefs, memories and a stock of information. This is what differentiates knowledge from information and data, whereas the latter can exist outside the human brain, knowledge must be processed within a person's brain. Van Beveren (2002) uses the words of Alexander, Schallert, and Hare (1991) when describing knowledge as referring to an individual's stock of information, skills, experiences, beliefs, and memories (Alexander et al., 1991, p. 371). Similar to Van Beveren's (2002) way of describing the distinction between information and knowledge, Alavi and Leidner (2001) say that information is converted to knowledge once it is processed in the mind of individuals, and knowledge becomes information once it is articulated and presented in the form of text, graphics, words, or other symbolic forms (Alavi & Leidner, 2001, p. 109).

In international business literature, the concepts of tacit and explicit knowledge, as well as experiential and objective knowledge, are widely used. Explicit and objective knowledge can be described as having similar characteristics, as this kind of knowledge can be expressed in formal, systematic language and, therefore, be acquired from libraries, databases, market research, product specification etc. In contrast to explicit and objective knowledge, tacit and experiential knowledge has a personal quality, which makes it hard to formalise and communicate. This kind of knowledge is, therefore, acquired through action, involvement and commitment in a specific context, such as from personal experience of operating in a foreign market (Johanson & Vahlne, 1977; Eriksson et al., 1997; Nonaka, 1991; 1994). In discussing tacit knowledge, Nonaka (1994), furthermore, divides this

knowledge into a cognitive and a technical element. The cognitive element helps an individual to perceive and define the world, and is described as an individual's images of reality and visions for the future. The cognitive element, therefore, has similar characteristics to Van Beveren's argument that knowledge must be processed in the human brain. The other part of tacit knowledge is the technical element, which involves concrete know-how and skills that apply to specific contexts.

Even though different terms are used in the discussion of what knowledge is about, I will, in line with several researchers, emphasise the similarities in the different terms. As, for example, Van Beveren (2002) argues, that explicit knowledge is no more than information. Information, i.e. explicit knowledge, can then be used to create new knowledge within peoples' own brains and, thereby, contribute to solving unfamiliar problems. A similar standpoint is argued by Mårtensson (2000), namely that explicit knowledge is expressed as being identical to information, and this information cannot be considered to be knowledge until it has been processed in the human brain.

So, by considering the thoughts of researchers within knowledge management, and connecting these thoughts to the arguments made by researchers within international business, a fruitful distinction between information and knowledge and their acquisitions is offered. I will distinguish between information and knowledge by using Van Beveren's (2002) definition of information. Information is then data within a context, and it can be acquired via databases, market research, country reports etc., when information is easy to transfer. In contrast to information, knowledge must be processed in the human brain. The acquisition of knowledge is, therefore, connected to involvement and experience in a specific context, and the knowledge that is acquired is of a more tacit kind and difficult to transfer.

### ***Knowledge Acquisition via the Usage of ICTs***

After distinguishing between information and knowledge, the two concepts will now be discussed in relation to the usage of ICTs. Whether knowledge can be acquired via ICTs has frequently been discussed within knowledge management research. Several researchers argue that information technology not is capable of creating knowledge in itself. In order to acquire knowledge, some human involvement is needed (McDermott, 1999; Mårtensson, 2000; Van Beveren, 2002). For example, Van Beveren (2002) argues that information technology has contributed to faster, more efficient methods for accessing information, but it is a mistake to equate information with knowledge.

Within international business research, Petersen et al. (2002) have presented an article about how the Internet may affect companies' foreign market expansion, and to what extent the Internet will facilitate the creation and transfer of tacit knowledge. The authors do not come to a definitive conclusion on this question but rather discuss different predictions about its effect. One of the predictions highlights the Internet's shortcomings in providing experiential knowledge. The Internet has the potential to facilitate firms' acquisition of objective knowledge but whether experiential knowledge can be acquired is much more questionable. The authors, however, also come up with a more optimistic proposition regarding the Internet's facilitation of experiential and tacit knowledge. This prediction states that when operating in foreign countries via the Internet, the staff of a company will develop techniques for handling foreign clients and cross-cultural exchanges. This experiential learning provides critical feedback into the ongoing activities of internationalising companies.

In sum, the question of whether or not tacit and experiential knowledge can be acquired via the Internet is still not solved. For the purpose of this study I will argue that by communicating via e-mail or searching for information via the Internet, a high-tech SME can only acquire information about foreign markets and foreign customers when information can be transferred. When this information is processed in the human brain and combined with a person's involvement and experience in a specific context, foreign market knowledge, i.e. knowledge about foreign markets and customers, can be acquired. In accordance with Petersen et al.'s (2002) more optimistic proposition of the Internet's facilitation of experiential and tacit knowledge, I argue that even though the involvement and experience in a foreign market has only occurred via the ICTs, important knowledge can be acquired. This knowledge is then of a more tacit kind, that will help a high-tech SME to perceive and define a foreign market, and know how to best approach specific foreign customers.

### **Interaction Processes in Business Relationships**

In order to study a high-tech SME's acquisition of foreign market knowledge in its interaction with foreign customers, it is useful to refer to the research that has been conducted in the European International Marketing and Purchasing (IMP) group. Researchers have then described a relationship between a seller and a buyer as a business relationship that evolves through interaction processes between the parties (Håkansson, 1982; Blankenburg Holm, Eriksson, & Johanson, 1996). Based on the interaction model (Håkansson, 1982), two related interaction processes, i.e. the exchange and adaptation processes, can be

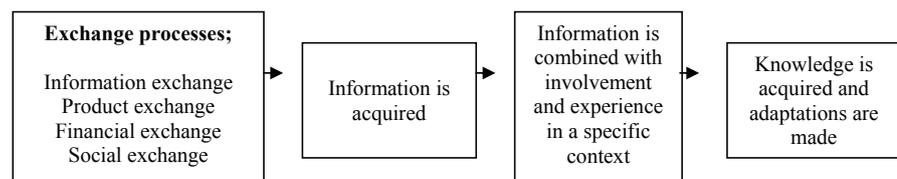
distinguished (Johanson & Mattsson, 1987). For the purpose of this chapter, these processes offer a useful point of departure in analysing a high-tech SME's interaction with its foreign customers. Even though the buyer and the seller company are two distinctive units, several researchers have emphasised the need for not analysing the two parties in isolation from other companies that might be connected to these two parties (Anderson et al., 1994; Blankenburg Holm et al., 1996). As described in Anderson et al. (1994), the two companies that are of interest, i.e. the supplier and the customer company, can be directly or indirectly connected with other relationships that may influence the two parties. In taking this aspect into consideration, this study focuses on a high-tech SME's interaction with a group of German customers, but in doing so the other customer relationships that are seen to influence these interactions will also be considered.

In discussing the exchange processes, the exchange can be distinguished in terms of product and service exchange, as well as in information, financial and social exchange. As pointed out in Håkansson (1982), the product or service is often the central exchange element, and its characteristics will, therefore, be likely to influence the relationship. Furthermore, Håkansson (1982) emphasises that the content of the information that is exchanged, whether it is technical, economic or organisational questions that dominate the exchange, might also be of importance for the relationship. The financial exchange and the quantity of money exchanged is an indicator of the economic importance of the relationship. Whether social exchange is evident in the relationship has important implications. The social exchange process can contribute to maintaining the relationship in periods where no transactions are taking place, by contributing to building up trust in the relationship. The need for social exchange and mutual trust can, however, vary depending on the elements that are exchanged in the relationships (Håkansson, 1982).

The other form of interaction processes are the adaptation processes that can take place in different dimensions. Technical adaptations are, for example, modifications of product and production processes. Logistical adaptations may concern delivery systems or stock levels. Further forms are administrative and financial adaptations, which deal with adapting payments in special ways. As pointed out by Johanson and Mattsson (1987), the exchange and adaptation processes are related and the more intensive the exchange processes between the companies, the stronger are the reasons for the involved companies to make adaptations. The type of elements that are exchanged in the relationship can, furthermore, also influence the characteristics of the adaptations made (Johanson & Mattsson, 1987).

For the purpose of this chapter, the two interaction processes that have been outlined above must be connected to a high-tech SME's usage of ICTs. Prior studies have indicated that these technologies facilitate a high-tech SME's interaction with foreign customers and its acquisition of information. In the analysis framework presented in Figure 1, the exchange processes are analysed in order to study how information is acquired. The analysis framework highlights that when information has been acquired, it must be combined with a person's involvement and experience in a specific context, in order for knowledge to be acquired. In this study, the adaptations that are made will be regarded as an indicator of what knowledge a high-tech SME has acquired.

Figure 1: An analysis framework of how a high-tech SME can acquire foreign market knowledge when interacting with its foreign customers via the Internet and e-mail.



### Research Methodology

In order to gain a deeper understanding of a high-tech SME's acquisition of foreign market knowledge when interacting with its foreign customers, a case study proved to be a suitable research methodology. I was interested in receiving the stories and perspectives from those people within a high-tech SME who were engaged with the task of managing foreign customer relations. In-depth interviews were, therefore, conducted.

The case selected for this study is a company that operates within the biotech industry and manufactures high-technological products. In selecting the company for this study, five criteria were set up. The company's founder should still work in the company, as the founder of small entrepreneurial enterprises has been shown to play an important role in the company's first years of internationalisation (Madsen & Servais, 1997). The second and third criteria assured that the company produced and sold a high-technological product on a foreign market. The company should, furthermore, be a small or medium-sized enterprise that used ICTs as a tool in its internationalisation

process. In order to keep the company studied anonymous, it is called Epsilon in this chapter.

As mentioned by Eisenhardt (1989), case studies typically combine different kinds of data collection methods, such as archives, interviews, questionnaires, and observations. The main source for this study is five face-to-face interviews and one telephone interview. Complementary data was found in annual reports, newspaper articles, databases and Web pages.

In April 2004, the first interview was conducted at Epsilon. During the following 12 months, another five interviews were conducted with people involved in managing the foreign customer relationships in the company. The interviews that were carried out at the company had slightly different objectives. The first interview had the objective of acquiring an overview of the company's internationalisation process. The second interview was made in order to follow up the company's international business. From the first two interviews, it was found that Epsilon used the Internet extensively in its collaboration with foreign customers. The third, fourth and fifth interviews, therefore, had the objective of investigating how Epsilon managed its collaboration with customers, by using the Internet.

Five of the six interviews made at Epsilon were conducted with the founder of the company, who also holds the position of the company's CEO. The CEO has had the main responsibility for managing the company's foreign customer relationships and, furthermore, is the person with the technological knowledge in the company. He is, therefore, the person who can answer customers' questions about how to use the products. The sixth interview was conducted with a German person, who was employed at Epsilon for a six month period in order to manage the German customer relations.

Each face-to-face interview lasted for about two h. All the interviews were semi-structured. An interview guide was used but was departed from when interesting topics came up during the interview. The face-to-face interviews were conducted at the company's office, where the company also runs its production. I, therefore, got access to another source for data collection, i.e. direct observation. I spent more than two hours at the company's office on each interview occasion, and I have been guided around its production units. The informal chats and the opportunity to observe how it was organised gave me a better understanding of the company.

### **A Case Study – Epsilon’s Interaction with Customers in the German Market**

Epsilon was established in the mid-1990s, and is a small Scandinavian biotech company specialised in producing biochemical products. Since the year it was founded, Epsilon has grown from a one-person company to a company of 10 employees in 2003. Within two years of the company’s establishment, Epsilon sold its products to customers in Germany, Great Britain and the USA. By 2003, Epsilon was also exporting its products to several European countries and Japan. Epsilon manages its sales through the company’s headquarter, and in some countries international distributors are used. The existing customers are both small and large companies that are mainly found in the area of biotech and diagnostics. This study focuses on Epsilon’s expansion into the German market, and on one group of German customers that purchase Epsilon’s product. In 2003, Germany was Epsilon’s third largest export market, and during the last two years Epsilon has started to direct a great deal of resources to the German market.

The customer companies that are the focus for this study are a group of German veterinary clinics. The first German veterinary clinic came into contact with Epsilon about two years after the company’s establishment. Since the first clinic started to use Epsilon’s product, several German clinics have contacted Epsilon to order the product as well. In 2003, Epsilon exported its product to about 30 veterinary clinics in the German market. Even though these veterinary clinics do not generate any large revenues for Epsilon, they have been a target market for the company and a lot of resources have been invested in these customers. The product that the German clinics purchase from Epsilon is a specialised diagnostic kit. In contrast to the existing products in the market, Epsilon’s diagnostic kit is equipped with a certain parasite that is fairly unknown in the market. The product is, therefore, more specialised than the common tests available. The veterinary clinics work with animals, and when treating the animals the clinics often use several test procedures. Epsilon’s specific diagnostic kit is one of these test procedures. In selling the diagnostic kit, Epsilon does not make any special customer modifications and every kit is the same to all customers.

The veterinary clinics can be differentiated based on their size. The smaller kinds of clinics usually employ one or two doctors, and have additional two or three employees. The other group of clinics is represented by the larger clinics that are more like centres of doctors. The number of doctors is often

three to twelve, and to each doctor one or two assistants are employed. The number of employees can then vary from 10 to 50 people.

Apart from the German veterinary clinics, Epsilon also sells its products to other customers in the German market. In contrast to the veterinary clinics, these customers might be larger companies and buy the other products that Epsilon manufactures. This chapter will focus on Epsilon's interaction with the German veterinary clinics but in doing so, Epsilon's other German customer interactions will also be considered.

### ***The CEO Manages the Communication with the German Customers***

During the period from 1996 to 2003, the CEO of Epsilon managed the contacts with the German veterinary clinics. When the small veterinary clinics had problems using the product, the CEO had great deal of contact with these clinics. The clinics needed support when starting to use the product. Epsilon has, therefore, made a special box for these clinics with all the accessories needed to start using the product. Those clinics that had used the test for several years bought the ready to use kit. Epsilon even considered making a video film in order to support new clinics when starting to use the product. Even though Epsilon has had rather a lot of contact with some of its clinics, the CEO does not know the customers at all and Epsilon has never met anyone from the clinics. The CEO believes that Epsilon's product has been recommended to the German veterinary clinics by other veterinary clinics in Germany, when the clinics participate in congresses and similar activities. The clinics then contact Epsilon via e-mail or telephone.

During this period of communication, the parties communicated in English when no one at Epsilon was able to speak German. The information material and instructions that were available for the customers were also in English. Difficulties in understanding the customers could, however, arise, due to language difficulties and problems in finding the right terms for the technical expressions. The contact was, therefore, mostly managed via e-mail. Epsilon also perceived that the German customers wanted to have the instruction material in the German language, instead of in English. Epsilon understood that the inability to speak the German language was an impediment for the company.

In September 2003, Epsilon employed a German student for a period of six months. The German employee was going to sell Epsilon's products in the German market and work with the German veterinary clinics. The employment implied that the German student would now handle some of the tasks that had previously been managed by the CEO, and Epsilon was hoping to be able to

develop better relations with the customers in Germany, as the company would now be able to have a direct contact with these customers.

During the autumn of 2003, Epsilon was hoping to find new customers in the German market. The first step was to find more veterinary clinics, and the second step was to start looking for a distributor in the German market that could sell one of Epsilon's other products in Germany. When the German student began working at Epsilon, the CEO perceived that the German customers really appreciated being able to communicate in German.

### ***The German Student Manages the Communication with German Customers***

In September of 2003, the German student began working at Epsilon. However, she lacked prior knowledge and experience in the biotechnology area. Her first task was to do some research about the German market and potential veterinary clinics. By using a German Internet site and different databases that displayed all the German veterinary clinics, she found about 600 addresses to potential veterinary clinics. The 600 addresses mostly represented the smaller kinds of clinics, the clinics which were in greatest need of this product. The German employee found the German market to be large, and she was not able to do research about the whole market by herself. In describing the market, the student expresses: *"I could have sat down for ages and found more addresses to these kinds of small clinics."* Even though the diagnostic kit that Epsilon sells is based on a common procedure, the kit is specialised towards a certain parasite that few clinics are aware of. The situation implies that even though Epsilon had several addresses to potential clinics, only a few of these would need the test. An even smaller number of clinics would be aware of Epsilon's specific kit, and the clinics that are not aware of the specific parasite will not buy it. The market and product characteristics imply that although the immunology sector within which Epsilon works is large, the doctors and researchers that both need and are aware of this specific parasite are rather limited.

During her work at Epsilon, the German student tried to come in contact with new German customers, not only veterinary clinics, by telephone or direct mailing. This was, however, more difficult than Epsilon expected. Epsilon experienced that if a company did not know about Epsilon, it was difficult to sell the product.

The German student, therefore, found that it is always the customers that contact Epsilon. The veterinary clinics most likely become aware of Epsilon through word-of-mouth. The German student explains: *"If some clinics have used the product and they were satisfied with the product, then*

*they will talk about this test to other companies that will ask where they have bought the test and then more customers want to come in contact with us."*

The German student, furthermore, argues: *"Brings me also back to the point that you need to build up a network. A person just believes you if another person tell the first person that we are trustworthy."*

When new veterinary clinics become interested in Epsilon, the clinics most often contact the company by e-mail or telephone. The clinics that become interested in Epsilon are usually already aware of the product and, therefore, know about the common procedure upon which the test is based. Some clinics also know about the specific parasite that is unique to Epsilon's product. When a new clinic e-mails or telephones Epsilon for the first time, the questions, therefore, often concern more general matters, such as the price and how many tests the customer can do with the kit. The clinics do not ask about how to work with the kit, the questions rather concern matters such as whether they can read the test in accordance with the common, already known procedure. The clinics often ask Epsilon how reliable the test is, i.e. whether Epsilon can guarantee that the customer will attain certain results. These kinds of questions are asked before a customer purchases the product. The questions are most often responded to by Epsilon via e-mail. If Epsilon, however, receives questions from a customer and the questions indicate that the customer does not understand the product, the German student can telephone the companies just to say that she will send them the instructions via e-mail. The telephone call does not include that much information but the customer often feels satisfied with it.

When communicating with the clinics, the German student talks with the doctors. She wants to come into contact with the doctors, because these are the people who ought to know most about the immunology area and, thereby, understand most of the matters. The German student has, however, experienced that the small clinics lack an in-depth knowledge about the tests. The small clinics should know about the common procedure but they may not know about the specific parasite.

When clinics receive the product, proper instructions and explanations are included. By following the instructions, the customer is introduced to the specific parasite and to the common procedure used when performing the test. After a customer has ordered the product once, Epsilon most often does not hear anything from the customers for one or two years. The clinic can use the product for one or two years before they need to order again. The German student explains: *"And that is not because they are impolite or that we are*

*impolite, it is just that it is no need for having more contact. And everything that is needed is told by the instructions that are sent out to customers.”*

The German student also mentions that she once tried to contact the existing customers, to ask if they had any problems or if they were interested in ordering again. She also introduced Epsilon’s other products. The telephone call resulted in her sending most of the customers a prospect of Epsilon’s other products.

Working with the veterinary clinics and the specialised diagnostic test was the German student’s first project during her time at Epsilon. The German student summarises her work by saying that: *“The German market has a great potential but we must figure out how to go into the German market without having personal contacts. It is a huge disappointment.”*

### **Discussion**

The purpose of this paper was to study a high-tech SME’s acquisition of foreign market knowledge in its interaction with existing and new customers within a foreign market. By taking a high-tech SME’s usage of the Internet and e-mail into consideration, the case study has given some indications about how the interaction processes and a high-tech SME’s acquisition of foreign market knowledge have been facilitated by the use of ICTs. Even though the group of German customers that have been studied in this chapter does not generate any large revenues for Epsilon, and the financial exchange, thereby, is rather limited, interesting findings regarding the other exchange processes will now be discussed.

### ***Knowledge Acquisition in the Information Exchange Process***

In the communication between the CEO of Epsilon and the clinics, it is indicated that an exchange of technical information has characterised the relationships. The customers have had problems in starting to use the product, and an exchange of information concerning the product has taken place. From the CEO’s exchange of technical information with the clinics, Epsilon acquired knowledge about the customers’ capability in using the product and the customers’ needs and demands. This knowledge resulted in a technical adaptation, i.e. the special box that Epsilon made to support new customers. An administrative adaptation was also made, which is demonstrated in Epsilon’s employment of the German student. The German student could meet the German customers’ requirements of having instructions in the German language instead of in English.

The German student has, more specifically, described the exchange processes in the relationships with the German veterinary clinics. As most of the clinics that contact Epsilon are well aware of the test procedure that the kit is based upon, the situation described by the German student shows that there seems to be no need for any intensive exchange of information. The well-informed clinics have some questions about the reliability of the product and its usage, but after the order has been made, the clinics usually do not need any further information. Some clinics, mostly the smaller ones, however, lack an in-depth knowledge in the area and need more technical information from Epsilon. A more intensive information exchange might be necessary in these relationships.

Even though the intensiveness of the information exchange is seen to be rather low in most relationships, e-mail is used to manage most of the information exchange when customers start using the product. E-mail has, thereby, facilitated this kind of technical information exchange, and in the CEO's interaction with the clinics, there are some indications that e-mail has facilitated the information exchange when language difficulties and technical expressions made it more difficult to understand each other on the telephone. When the information that was acquired via e-mail was combined with Epsilon's experience and involvement in the German market, Epsilon acquired important knowledge about the existing veterinary clinics.

#### ***Knowledge Acquisition in the Product Exchange Process***

Epsilon's product is standardised, in the sense that all customers buy the same product, and by following the instructions that come with the product, most of the customers are able to use it without any intensive need of help. When the product has been received, the clinic can generally use it for one or two years before another product needs to be ordered. As pointed out in Johanson and Mattsson (1987), the need of industrial activities will influence the interaction processes. In this case, the product characteristics are seen to contribute to the limited information exchange that takes place in most customer relationships. The diagnostic kit is, however, specialised towards a certain parasite and few clinics are shown to be aware of this specific test. These characteristics of the product are shown to influence Epsilon's ability to initiate a product exchange with new potential customers in the German market. This is illustrated in Epsilon's use of the Internet in order to find new potential clinics. The information that was acquired gave Epsilon an overview of the market and the German veterinary clinics. When this information was combined with Epsilon's experience and involvement in the market, Epsilon acquired

knowledge about the number of customers that both needed and were aware of the product, which differed from the information that was acquired via the Internet. The German student also tried to initiate a product exchange with new customers in the German market, by using the telephone and e-mail. The German student experienced that Epsilon needed to have personal contacts in potential customer companies in order to initiate a product exchange. As expressed by the German student, “...*A person just believes you if another person tell the first person that we are trustworthy*”.

So, in trying to initiate a product exchange with new potential customers, Epsilon acquired knowledge about how to best approach potential German customers. To approach a new customer required Epsilon to have some personal contacts in the potential customer company. Epsilon has also acquired knowledge about how the clinics are connected to each other and how the clinics have received information about the company.

The case, therefore, indicates that the characteristics of the product have influenced Epsilon’s opportunities for initiating a product exchange with new customers. Even though the Internet and e-mail have facilitated the existing and new veterinary clinics’ initiation of a product exchange, it is seen that these ICTs not have facilitated Epsilon’s initiation of a product exchange with new customers.

### ***Knowledge Acquisition in the Social Exchange Process***

In trying to initiate a product exchange with new German customers and in understanding how the veterinary clinics are connected to each other, elements of trust and personal relationships are seen to be crucial for Epsilon in their interaction with existing and new German customers. Epsilon’s lack of personal contacts in potential customer companies and the need for trust have made it more difficult for Epsilon to use e-mail in trying to initiate new customer relationships.

As pointed out by Epsilon’s CEO, the company has never met the veterinary clinics and the CEO does not know them at all. The CEO’s argument highlights that there has been a rather limited social exchange in the relationships. Epsilon has, however, made some adaptations in order to better satisfy the needs of the clinics, and these adaptations have contributed to the development of trust between Epsilon and the clients. The German student also points out that she could sometimes use the telephone when the questions indicated that customers did not understand the product. A telephone call solely for the purpose of exchanging some general information is shown to be

appreciated by the customers and, therefore, also contributes to the development of trust in these relationships.

### **Concluding Remarks and Future Research**

This study has demonstrated how a high-tech SME has acquired foreign market knowledge in its interaction with new and existing customers in a foreign market, and how the usage of ICTs has facilitated this interaction and the acquisition of knowledge. The analysis has indicated that e-mail has facilitated the exchange of technical information in customer relationships, even though the information exchange is rather limited in the relationships. In support of several prior studies of SMEs' ICT usage in its internationalisation process (Poon & Swatman, 1997; Sinkovics et al., 2004), this study shows that e-mail is an important ICT for Epsilon in order to acquire information about foreign customers and markets. When the information has then been combined with Epsilon's involvement and experience in the German market, foreign market knowledge has been acquired. Considering Pedersen et al.'s (2002) different predictions, this study has taken a rather optimistic standpoint in ICTs' facilitation of experiential and tacit knowledge acquisition. This standpoint can be seen in contrast to several knowledge management researchers' opinions in this question.

In light of this optimistic finding regarding the ICTs' facilitation of knowledge acquisition, the case also points to the shortcomings of ICTs in Epsilon's attempt to initiate new customer relationships, as few potential customers are aware of Epsilon's specialised kit. The Internet has contributed to Epsilon's search for addresses to new potential customers, but in order to initiate a product exchange with new customers, personal relationships are needed. Prior studies have highlighted the ICTs' usage among small, high-tech companies, producing specialised niche products (Quelch & Klein, 1996; Moen, 2002). The case of Epsilon has indicated that difficulties may come in selling these products in international markets by using ICTs, where few customers are aware of Epsilon's specialised product. Elements of trust and personal relationships are seen as being important in order to sell these products in foreign markets. In the case of Epsilon, Internet, e-mail and telephone are the only technologies used in interacting with existing and potential German customers. In his study of the Internet and SMEs' international marketing, Moen (2002) points out that the companies in his study were using ICTs to support customer relationships and partners in export markets, but that the ICTs could not replace or reduce the personal involvement and market presence. In order to provide more detailed

knowledge about how a high-tech SME's product characteristics are related to the level of e-mail interaction that occurs in customer relationships, and how these aspects then influence a high-tech SME's acquisition of foreign market knowledge, quantitative research can be used.

As shown in this case, there is mostly no need for any intensive information exchange in the customer relationships. When connecting this finding with the arguments in Sharma and Blomstermo (2003), it is shown that the two-way flow of information, emphasised as important for a small high-tech company's acquisition of foreign market knowledge, is rather limited in most of Epsilon's relationships with veterinary clinics. Furthermore, the information exchange has, to a large extent, been initiated by the customers, with their questions about the product. The customers with more questions will initiate a more intensive and extensive information exchange, which could result in Epsilon acquiring more specific knowledge about these customers' needs and demands. However, this case has only provided indications about the relationships between the customers' need for information, the level of intensity in the information exchange and a high-tech SME's acquisition of foreign market knowledge. Quantitative research could provide more detailed knowledge in this area.

### **Managerial Implications**

This case study has shown that small, high-tech companies, operating in international markets, can acquire important knowledge of new and existing customers in foreign countries by using the Internet and e-mail. However, managers must be aware of the differences between information and knowledge. The information that can be acquired via the Internet and e-mail communication must be combined with a person's experiences and involvement in a specific context, in order to acquire knowledge.

The knowledge that can be acquired in the interaction with foreign customers is important for the company's expansion in foreign markets. It is, therefore, crucial for managers to keep an intensive and extensive exchange of information with the customers, especially when customers do not frequently place an order. In those situations, the managers of a small high-tech company might need to think even more about maintaining the interaction with the customers.

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## ARTICLE 5

### **The internationalisation modes of Born Globals: A longitudinal study**

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# The internationalisation modes of Born Globals: A longitudinal study

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## KEYWORDS

International entrepreneurship;  
Born Globals;  
Internationalisation modes;  
Commitment;  
Foreign customer knowledge

**Summary** This study explores which internationalisation modes Born Globals use in their initial and continued internationalisation. Based on longitudinal data from eight biotechnology Born Globals, we divided the firms into three subsets: the low committers, which use low commitment internationalisation modes in their initial and continued internationalisation; the incremental committers, which experience an increase from low to high commitment modes in their continued internationalisation; and the high committers, which use both low and high commitment internationalisation modes from inception. The critical difference amongst the three subsets is the speed at which these firms commit resources to foreign markets.

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## Introduction

The phenomenon of Born Globals has attracted major interest within the field of international entrepreneurship. Most studies in this field have focused on the formation of these firms and their initial internationalisation process. In this respect, our understanding of these firms is limited because little is known about the continued internationalisation of Born Global firms. Liesch et al. (2007) have acknowledged this research gap, and called for more research on what happens to Born Globals after their initial operations in foreign markets have been established. This study answers this call for research by addressing the fol-

lowing research question: Which internationalisation modes do Born Globals use in their initial and continued internationalisation processes? In an attempt to answer this research question, we conducted longitudinal case studies of eight Born Globals that are active in the Swedish biotechnology field. Influenced by other scholars (Autio et al., 2000; Knight and Cavusgil, 1996), we define a *Born Global* as a company that, from its inception, discovers and exploits opportunities in multiple countries. We decided to focus on the Swedish biotechnology field because it is an example of a highly internationalised field characterised by rapid change and growth. Knowledge-intensive, biotechnology Born Globals are moreover relatively common in Sweden because the country's small geographic size allows knowledge to be frequently created as a result of interactions amongst companies, institutes, and universities (OECD, 2002), which help to produce a large knowledge base.

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Based on previous studies, we know that Born Globals start their internationalisation process by simultaneously using multiple and different internationalisation modes (Andersson and Wictor, 2003; Sharma and Blomstermo, 2003). These findings challenge the conventional view presented in knowledge-based internationalisation process theory, which suggests that firms experience an incremental development in the internationalisation modes used during their internationalisation processes (Johanson and Vahlne, 1977; Johanson and Wiedersheim-Paul, 1975). However, as Young et al. (2003) point out, 'insufficient emphasis has been given to entry and subsequent market servicing modes used by international entrepreneurial firms' (p. 37). The purpose of this study is, therefore, to explore which internationalisation modes Born Globals use during their initial and continued internationalisation. The term *internationalisation mode* refers to the organisational structure that companies use to enter and penetrate foreign markets (Agndal and Chetty, 2007). To fulfil the purpose of this study, we broadened the definition to include the internationalisation modes used by companies during their initial entry into foreign markets and their continued internationalisation.

This study contributes to international entrepreneurship research in several ways. First, for research about international entrepreneurship and Born Globals to develop further, we need to know more about the continued internationalisation of these firms (Liesch et al., 2007). Second, because international entrepreneurship research is lacking notions from international business theories (Young et al., 2003), such theories are needed to broaden the scope of the research field. This study contributes to international entrepreneurship research by integrating concepts and dynamic views from knowledge-based internationalisation process theory (Johanson and Vahlne, 1977) with international entrepreneurship research.

The article is structured as follows: a theoretical framework discussing the results from previous research studies about internationalisation and Born Globals follows the introduction. Next, the methodology of the study is discussed, followed by the presentation and analysis of case study data. The article then offers a discussion of the findings and limitations, as well as suggestions for further research.

## Theoretical framework

### Knowledge-based internationalisation process theory

Knowledge-based internationalisation process theory emphasises the dynamic nature of a company's operations in foreign markets (Johanson and Vahlne, 1977). According to process theory, the main mechanism behind a company's change in internationalisation mode is its development of knowledge about foreign markets. By initiating operations in a foreign market, an internationalising company develops experience of operating in that market. This experience is based on a company's interactions within foreign business relationships, such as relationships with foreign customers, suppliers, and competitors (Blomstermo et al., 2004). In its interaction within these relationships, a company develops

experiential knowledge of foreign markets, which, in turn, influences the company's perceptions of the costs, risks, and benefits of operating in the specific foreign market.

Knowledge-based internationalisation process theory has provided a dynamic perspective on the internationalisation modes that companies use in their internationalisation process. The theoretical arguments of this theory are based on empirical observations of the foreign operations of Swedish multinationals (Johanson and Wiedersheim-Paul, 1975). These observations demonstrated an incremental development in the modes used by companies at different points in time during their international expansion. Johanson and Wiedersheim-Paul (1975), moreover, showed that there is an incremental increase in a company's resource commitments to a specific foreign market. The increasing resource commitments, in turn, reflect the company's increased foreign market knowledge that is acquired whilst working in accordance with the different internationalisation modes. The central argument in knowledge-based internationalisation process theory is, therefore, that as companies acquire more experiential knowledge of foreign markets, they are able to progress to other modes of internationalisation that require increased resource commitments. In accordance with existing research, internationalisation modes can be distinguished amongst direct exporting, exporting via foreign intermediaries, licensing and franchising, strategic alliances/joint ventures, and sales and/or manufacturing subsidiaries (Agndal and Chetty, 2007; Pedersen and Petersen, 1998). These modes differ in the resource commitments they require from a company. In line with previous studies (Erramilli and Rao, 1990; Johanson and Wiedersheim-Paul, 1975), we categorise exporting modes (including licensing and franchising) as low commitment internationalisation modes, whereas strategic alliances, joint ventures, and subsidiaries are categorised as high commitment internationalisation modes.

### International entrepreneurship research

Born Globals are companies that begin operating in several foreign markets from inception or soon thereafter. Studies have shown that these companies simultaneously use multiple and different modes of internationalisation (Andersson and Wictor, 2003; McDougall et al., 2003; Sharma and Blomstermo, 2003). Sharma and Blomstermo (2003) argued that entry into a large number of foreign markets using a variety of different entry modes can open up new opportunities for continued internationalisation for the firms. As indicated by the studies reviewed in Table 1, most Born Global studies have analysed only the initial entry modes used by these firms in foreign markets. The few studies that have touched upon the continued internationalisation modes used by Born Globals have indicated that these firms tend to increase their resource commitments and establish high commitment modes (Jones, 1999; Sharma and Blomstermo, 2003). It has, moreover, been argued that Born Globals are flexible in their internationalisation modes used (Rialp et al., 2005) and adapt their internationalisation modes to the needs of the individual market and clients (Sharma and Blomstermo, 2003). These arguments indicate that Born Globals do not display one specific pattern in their use of

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**Table 1** Internationalisation modes used by Born Globals and high-tech SMEs.

Author	Type of firms	Initial internationalisation modes used	Continued internationalisation modes used
Bell (1995)	High-tech SMEs	Multiple and different modes used; dominated by low commitment modes	No or few changes made; low commitment modes still dominated
Jones (1999)	High-tech SMEs, including international entrepreneurs	( <i>For the international entrepreneurs</i> ): Multiple and different modes used; including both low and high commitment modes	( <i>For the international entrepreneurs</i> ): Investments made in high commitment modes
Crick and Jones (2000)	High-tech SMEs	Multiple and different modes used; dominated by low commitment modes	Investments made in high commitment modes in core markets
Shrader et al. (2000)	International new ventures	Multiple and different modes used; including both low and high commitment modes	Not analysed
Andersson and Wictor (2003)	Born Globals	Multiple and different modes used; including both low and high commitment modes	Not analysed
McDougall et al. (2003)	International new ventures	Multiple modes used	Not analysed
Sharma and Blomstermo (2003)	Born Globals	Multiple and different modes used	Incremental investments made in high commitment modes
Crick and Spence (2005)	High-tech SMEs	Different modes used; dominated by low commitment modes	Different patterns found; no change in modes, investments made in high commitment modes, change from high to low commitment modes

internationalisation modes during their internationalisation process.

Firms that have been previously conceptualised as high-tech small and medium-sized enterprises (SMEs) are similar to many Born Globals. Both Born Globals and high-tech SMEs have been shown to operate in dynamic markets where market conditions change rapidly; thus, these firms are required to adapt rapidly to new foreign market conditions, especially during their internationalisation (Crick and Jones, 2000; Crick and Spence, 2005; Rialp et al., 2005). Contrary to Born Global studies that have not shown whether changes in market conditions require changes in internationalisation modes, previous studies of high-tech SMEs have provided mixed results on the tendency of these firms to change modes in their continued internationalisation (see Table 1). Whereas some high-tech SMEs increase their resource commitments in the form of investments in high commitment modes (Crick and Jones, 2000), others demonstrate an opposite behaviour (Crick and Spence, 2005), and still other firms show no change in the internationalisation modes used in their continued internationalisation processes (Bell, 1995).

### Integrating two theoretical perspectives

Knowledge-based internationalisation process theory and entrepreneurship research differ in their focus and arguments regarding the internationalisation modes used in firms' internationalisation. Knowledge-based theory has fo-

cused on firms' incremental change of internationalisation modes. In contrast, international entrepreneurship research has concentrated on the existence of Born Globals and their initial internationalisation modes but has paid less attention to the continued internationalisation of these firms (see Figure 1).

In comparison to the knowledge-based emphasis of a dynamic perspective, international entrepreneurship research has employed a more static perspective when investigating the internationalisation modes that firms use. Given this difference of focus, the two theoretical perspectives differ in their views on the resource commitments made by firms during their internationalisation processes. Whereas knowledge-based theory emphasises an incremental increase in resource commitments in foreign markets over time, international entrepreneurship research provides evidence of a more rapid increase in resource commitments that have already occurred during the initial internationalisation. According to knowledge-based theory, firms experience an incremental development in the modes used during the internationalisation process because a change from low to high commitment modes requires foreign market knowledge. On a similar note, studies in international entrepreneurship have indicated that foreign market knowledge is critical in the internationalisation of these firms (Yli-Renko et al., 2002) and that foreign customer knowledge specifically influences the international success of Born Globals (Knight et al., 2004).

Because the aim of this study is to explore which internationalisation modes Born Globals use during their initial and

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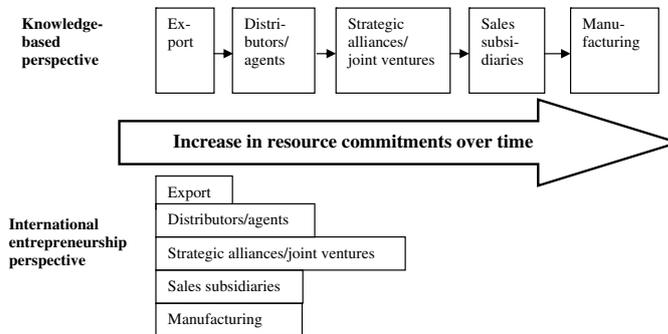


Figure 1 The theoretical perspectives.

Table 2 Definitions of key concepts used in this study.

High commitment internationalisation modes	Strategic alliances, joint ventures, and subsidiaries
Low commitment internationalisation modes	Exporting modes (including licensing and franchising)
Foreign customers	The end users of a company's products (i.e., the customer organisations that use the company's products in the end)
Foreign customer knowledge	Experiential knowledge about the characteristics of foreign customers and ways to interact with these types of customers, as well as knowledge about foreign customers' needs, demands, and problem-solving approaches

continued internationalisation, we find that the dynamic perspective of the knowledge-based theory can contribute useful insights into international entrepreneurship research. Thus, integrating these two theoretical perspectives may reveal a relationship between the internationalisation modes used by Born Globals and their development of foreign customer knowledge. In doing so, further insights into and an understanding of Born Globals' continued internationalisation behaviour could be gained. We define foreign customer knowledge as experiential knowledge about the characteristics of foreign customers and ways to interact with these types of customers, as well as knowledge about foreign customers' needs, demands, and problem-solving approaches. The definitions of key concepts used in this study are presented in Table 2.

### Research method

To fulfil the purpose of this study, we adopted a qualitative case study approach. Because we want to investigate context-specific phenomena, qualitative data are appropriate in this type of study. By employing a case study approach, we can, moreover, derive new theory from the data (Eisenhardt, 1989).

### The case companies

Previous studies have argued that biotechnology is a set of technologies used in various fields and, therefore, cannot be regarded as an industry per se (Renko et al., 2005). In this study, we chose to use the Swedish biotechnology field as an empirical starting point for exploring the internation-

alisation of Born Globals because, in most cases, companies within the biotechnology field can be considered truly global (Brännback et al., 2007).

We selected the case companies from 'The Swedish Biotech Industry Guide', a database that lists and offers information about the majority of companies in the Swedish biotechnology field. We chose to focus on the biotechnology cluster in the Swedish city of Uppsala because the Uppsala cluster comprises about one fourth of Sweden's biotechnology field in the form of two universities and three large national research agencies, as well as several large pharmaceutical groups and SMEs. Another advantage of this cluster is its geographical proximity to Stockholm, where many of Sweden's largest venture capital investment companies are located. In relative terms, Uppsala has, furthermore, been described as one of the most biotechnology-intensive cities in the world (Waxell and Malmberg, 2007). Its concentration of a multitude of interesting organisations in such a comparatively small area facilitated data collection by providing easy and continuous access to interviewees.

In addition to being part of the Uppsala biotechnology cluster, potential case firms had to satisfy the following criteria: (1) fulfil the definition of an SME, (2) continue to employ their founders, (3) conduct their own research and development (R&D), and (4) have sold at least one product in a foreign (i.e., non-Swedish) market. These criteria were chosen so that we could find internationally active firms that are capable of managing the production chain themselves from R&D to the interaction with foreign actors. Because the founders of small entrepreneurial enterprises have often been shown to play important roles in the firms'

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**Table 3** The Born Globals in 2003.

Company	Develops and sells	Number of staff in 2003	Turnover in 2003 (thousands of USD)	Net profit/loss in 2003 (thousands of USD)
A	High-quality biochemicals for the life science industry	10	1076	123
B	Products within the area of biological control and plant growth stimulation	13	922	-1091
C	Microsystems for the life science industry	29	2012	-2725
D	Ready-made adjuvants for animal vaccine development	7	933	-516
E	Diagnostic products within the area of veterinary medicine and food safety	25	2450	-494
F	New drugs and dosage forms for improved drug treatment	19	2756	-3075
G	Microfluidic solutions for the life science industry	70	639	-28,048
H	Products for genetic analysis in clinical research	90	11,950	-24,256

first years of internationalisation (Rialp et al., 2005), we also wanted the founders to be still active in the firms.

We chose to contact qualified candidate case companies randomly. All of the companies that we subsequently contacted agreed to participate in the study, and data collection was halted after 14 companies had been visited. Because the interviews conducted at the last few companies provided us with narratives similar to those we had previously heard, the theoretical saturation point seemed to have been reached. New insights into the subject of biotechnology companies' internationalisation were no longer gained and, therefore, had been substantially explained. Reaching the theoretical saturation point also indicated that it was unlikely that we would obtain an incremental improvement of theory if we were to continue investigating more companies (Eisenhardt, 1989).

Of the 14 companies under study, only the eight companies that satisfied the Born Global criteria were included in this study. Table 3 provides information about the Born Global companies when the study was started in 2003. Tables 4 and 5 show that these eight companies fit into the commonly used operationalisation that views Born Globals 'as firms less than 20 years old that internationalised on average within three years of founding and generate at least 25% of total sales from abroad' (Knight et al., 2004, p. 649). Of the six companies that were excluded, one was

too old (22 years) to be considered a Born Global, and the remaining five companies had their first international sale more than three years after their inception (4 years, 4 years, 8 years, 10 years, and 13 years).

#### Data collection

In this study, we considered the individual biotechnology companies to be the units of analysis. To investigate their international development, we chose to conduct interviews with the founders and managers who had been most responsible for managing the companies' internationalisation.

Between January 2003 and June 2005, 33 face-to-face, semistructured interviews were conducted with the founders and managers at the eight companies. The duration of the interviews ranged from 40 to 160 min per interview. Between June 2005 and April 2008, we continued to follow the development of these companies by collecting secondary data and conducting phone interviews with respondents.

A major strength of a case study data collection is the opportunity to use different sources of evidence (Creswell, 2003; Yin, 2003). Multiple sources of evidence are also particularly important in terms of strengthening the construct validity. The quality of empirical research in this explor-

**Table 4** The Born Globals.

Company	Business area	Founded	Year of first foreign sale	Main source of funding	Number of interviews
A	Industrial biotechnology	1995	1995/1996	Family-owned	5
B	Agrobiotechnology	1996	1998	Farming and food industry group	1
C	Diagnostics	1998	1999	Venture capital company	11
D	Pharmaceuticals	1999	1999/2000	Private investors	2
E	Diagnostics	2001	2001/2002	Foundation	4
F	Pharmaceuticals	1995	1997	Venture capital company	1
G	Life sciences suppliers/manufacturers	2000	2000/2001	Venture capital company	5
H	Life sciences suppliers/manufacturers	1997	1999/2000	Venture capital company	4

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**Table 5** The Born Globals' internationalisation.

Company	Export percentage (compared to total sales)	Foreign market entries since foundation (regions of the world)	Nature of important value-creating activities in foreign markets
A	28% (within 3 years after foundation)	Europe, North America, South America, Asia, Africa, Oceania	Marketing and distribution
B	30% (within 10 years after foundation)	Europe	Production, marketing and distribution
C	70% (within 6 years after foundation)	Europe, North America	No important value-creating activities in foreign markets
D	98% (within 3 years after foundation)	Europe, North America, South America, Asia, Oceania	R&D and marketing
E	90% (within 3 years after foundation)	Europe, North America, South America, Asia, Africa, Oceania	R&D, marketing and distribution
F	100% (within 3 years after foundation)	Europe, Asia	Marketing and distribution
G	80% (within 3 years after foundation)	Europe, North America	Marketing and distribution
H	85% (within 3 years after foundation)	Europe, North America, South America, Asia, Africa, Oceania	R&D, production, marketing and distribution

*Note:* We see the most important value-creating activities as the key aspects of the value chain, namely research and development (R&D) activities, production, as well as marketing and distribution (Jones, 1999).

ative study was measured only in terms of construct validity, reliability, and external validity because internal validity is a concern only in causal (or explanatory) case studies (Yin, 2003).

In addition to conducting semistructured interviews with different employees at most of the sites, we used archival documentation from the companies and information collected from databases, such as master's theses, news articles, and annual reports. We also established evidence chains and found that the documentary evidence corroborated with the stories provided by the different founders and managers. Another test was to receive feedback on drafts of the cases from the interviewees.

To strengthen the external validity of our multiple case studies, we followed experiment-like replication logic when collecting the data (Yin, 2003). Even though our interviews were semistructured, the respondents were given the opportunity to speak freely and to elaborate on their answers. To ensure that the same topics were covered at all of the companies, we utilised an interview guide.

To increase the reliability of the study, we kept a detailed account of our activities in a research protocol, which included transcripts of the audiotape recordings from all of the interviews, transcripts of our field notes and observations, and transcripts of the secondary data. Because the goal of reliability is to minimise errors and biases in a study, we enlisted two researchers to conduct the interviews at the investigated companies.

### Cross-case analysis

To analyse the data from the eight case studies, we used cross-case synthesis. This technique treats each individual case as a separate study, and the analysis can reveal both similarities and differences (Yin, 2003). Based on an extensive empirical comparison of the eight cases, we determined that they could be divided into three groups based

on the internationalisation modes that they used during their internationalisation. The first group comprises the *low committers*, which used low commitment internationalisation modes to begin their internationalisation and to commence their continued internationalisation process. The second group consists of the *incremental committers*, which began their internationalisation using low commitment internationalisation modes but changed internationalisation modes in some markets during their continued internationalisation. The third group of Born Globals is the *high committers*, which began their internationalisation using both high commitment and low commitment internationalisation modes and changed modes during their continued internationalisation.

The cross-case analysis was based on indepth descriptions of the international development of one case from each of the three groups of low, incremental, and high committers. Because the firms in each group internationalised in a similar manner, these three case firms will represent the other firms in the same group. We chose the cases of companies A, E, and G because they were the firms that can best illuminate the points that this analysis seeks to make. Examples of changes in foreign market commitment in all of the case companies are presented in Table 6.

### An example of a low committer: company A

Company A, which was established in the mid-1990s, possesses a product portfolio of over 200 products, including different enzymes, proteins, and user-friendly analytical kits. Company A's main customers are well-established biotechnology companies as well as smaller clinics all around the world. Because company A's products are considered to be user-friendly, most of them can be ordered by e-mail and telephone, and most customers know how to use these products without requiring any further interaction with company A. As a consequence, the company can manage

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**Table 6** The Born Globals' main internationalisation modes.

Company	Direct export (2003)	Exports via independent representatives (2003)	Establishment of local sales subsidiaries (2003)	Establishment of local manufacturing subsidiaries (2003)	Examples of changes in foreign market commitment during the continued internationalisation (2003–2008)
A	Yes	Yes (Switzerland)	No	No	Expands exports to several new markets; starts up new product-development project with German company
B	Yes (Norway and Austria)	Yes (Finland)	No	No	In 2004, company B receives approval to sell its products in the European market; as a consequence, company B expands exports to Denmark, Switzerland, Poland, Lithuania, and Italy
C	Yes	No	No	No	Enters into collaborator agreements with several foreign diagnostic companies
D	Yes	No	No	No	Enters into distribution agreement with Japanese distributor; enters into a product-development project with Dutch company and a research collaboration project with a Swiss company
E	Yes	Yes	No	No	Enters into strategic alliance with German company
F	Yes	Yes	No	No	Enters into joint venture agreement with British pharmaceutical company; the joint venture will manage the marketing and distribution of both companies in the Nordic countries (Norway, Sweden, Finland, Denmark, and Iceland)
G	Yes	Yes	Owens sales subsidiaries in the USA, the UK, and Germany	No	Closes sales subsidiaries in the UK and Germany
H	Yes	Yes	Owens sales subsidiaries in the USA, the UK, Germany, France, and the Benelux countries	No	Opens sales subsidiaries in Switzerland, Italy, and Japan; buys firm with manufacturing unit in the USA

the majority of its sales from its headquarters in Uppsala. Company A also uses a distributor of its products in the Swiss market.

When asked about which obstacles company A has encountered during the company's internationalisation, the founder remarked, 'I have generally never noticed any obstacles, but I do not know if this is because I don't have to meet our foreign customers personally. ... The contact is mostly handled via e-mail' (Excerpt from interview 11/04/2003). Even though most of the contact with foreign customers is managed without much interaction, some customers do have questions that need to be addressed (e.g., concerning the expected results from using certain products). When the study was started in 2003, Germany was company A's third largest export market. In some cases, company A also co-developed products with its German customers. The higher level of contact that this required revealed the existence of a language barrier between company A and its German customers. The founder stated that 'Most of the time it is hard to understand the customer

because of language difficulties. There are a lot of technical terms, and we have a hard time finding the right words for these' (Excerpt from interview 11/11/2003).

A student from Germany was engaged to help with the sale of company A's products to the German market in an effort to overcome the language barrier that existed when dealing with the German customers. Her responsibilities included creating product information materials in German and communicating with the German customers. She commented, 'When I started here, there was no existing marketing department. ... Until I started, it has always been the customers who contact us' (Excerpt from interview 05/04/2004). With the addition of the German student, the founder noticed a change amongst the German customers, who 'turned to us and asked us why we try to speak English when we can speak German. It has been very much appreciated that we now can communicate in German' (Excerpt from interview 11/11/2003).

During its continued internationalisation, company A continues to export to new markets. It is, however, still most

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often the foreign customers who contact company A-not the other way around. Company A generates about 10–20 new foreign customers yearly via their homepage. Many of these customers discover company A whilst searching for the names of the company's products on the Internet.

Because company A is not physically present in foreign markets and its interaction with foreign customers is limited, the company experiences difficulties in developing foreign customer knowledge. Even though company A is constantly expanding its exports into new markets and has customers all over the world, its use of internationalisation modes has not substantially changed during its continued internationalisation. The company, however, is moving towards increasing its commitment of resources to the German market. For example, it started a new collaborative product-development project with a German diagnostics company in 2007. The company's Web shop is, moreover, continuously updated with features (e.g., product information in German), thus making it easier for foreign customers to buy products via the Web. Since the beginning of this study in 2003, the company has been profitable every year. As evident from the founder's following statement, the company's strategic intent was never to increase dramatically its foreign market commitment during its internationalisation: 'I do not feel any need to make the company into a large company with subsidiaries abroad' (Excerpt from interview 11/04/2003).

Similar to company A, the other low committers have also increased their presence in foreign markets during their continued internationalisation. For example, company B expanded its exports into five new foreign markets between 2003 and 2008. Companies C and D have also taken additional steps towards increased market commitment in specific markets (see Table 6). However, none of the low committers have changed to higher committed internationalisation modes during their continued internationalisation; they instead continue to focus on direct exports.

#### An example of an incremental committer: company E

Company E, which was established in its present form at the beginning of 2001, develops, manufactures, and sells diagnostic products within the areas of veterinary medicine and food safety. In its portfolio, company E has about 30 products that it sells to large-scale laboratories as well as to clinical and practical veterinarians. Because company E's products are easy for customers to use, the company can start its internationalisation mainly through direct export, as well as via distributors or agents that act as bridges to foreign customers. Company E's use of distributors is extensive; as a result, it has developed a distributor network that covers more than 80 countries all over the world. Because company E has indirect relationships with most of the end users of its products, it does not commit vast amounts of resources to support its direct relationships with these end users. Company E's CEO described the situation as follows:

Many of our products are so well known that the customer does not need too much information before testing the products. In these cases our sellers do not have

to visit companies to demonstrate how the product works. If the customer, on the other hand, has problems with their products, it is important that the distributor has the technical knowledge to help the customer. (Excerpt from interview 02/04/2003)

Even though company E's direct interactions with the end users of its products are not frequent, it invests resources in the form of time and capital to market the company to its distributors in foreign markets. Company E's product manager described the company's marketing approach as follows: 'Our marketing department has lately become more eager to perform follow-up activities with distributors since [the new CEO] started. The follow-up activities consist of, amongst other things, regular visits to the distributor companies' (Excerpt from interview 05/06/2003).

One of the goals of company E's marketing department is to meet distributor companies in the most important key markets in person at least once a year. It is important for company E to maintain a continuous relationship with its distributors because it is competing with numerous other suppliers for the attention of these distributors. Maintaining direct contact with distributors is also important as a means of gaining knowledge about the business climate, bureaucracy, laws, and norms in different foreign markets. The CEO of company E explained that distributors 'provide us with this [knowledge about the business climate, bureaucracy, laws, and norms] information. Direct presence in the market is often demanded to acquire this knowledge' (Excerpt from interview 05/06/2003).

Because company E usually does not interact directly with its foreign customers and has a limited physical presence in foreign markets, it is difficult for the company to develop experiential knowledge about its foreign customers. Company E instead interacts more frequently with its foreign distributors. In doing so, the firm develops experiential knowledge about its foreign distributors and their knowledge about the foreign market and the end users in that market. Even though company E is focused on improving its relationships with distributors, the choice of using distributors for international sales is not considered an optimal strategy. One particularly negative effect of using distributors is that company E must relinquish part of its profits in the form of distributor discounts. The distributor system also demands a great deal of attention from company E's marketing department. The CEO envisioned that company E's reliance on distributors may possibly change in the future:

If we in the future can manage without distributors, we would probably open a European sales organisation with two employees that would cover the whole European market. This would not imply that we had our own sales organisations in every country. There are, however, no immediate plans for the introduction of a European sales organisation. (Excerpt from interview 02/04/2003)

In contrast to the low committers, company E committed incrementally more resources to foreign markets between 2003 and 2008. When the study was started in 2003, company E relied heavily on its interaction with foreign distributors to market its products abroad. In 2005, company E began generating a profit. By entering into a strategic alliance with a German SME in 2007, company E took a big step

towards greater commitment to the German market. Through the sharing of product portfolios, these two companies have joined forces in international sales and marketing. The German company handles the German and Benelux market, whereas company E handles the worldwide market, mainly by using its existing distributor network. Even though the strategic alliance does not facilitate direct interaction with the German customers, it increases company E's commitment to the German market.

In many respects, the other incremental committer, company F, has developed similarly to company E. In its sales efforts, the company does not turn to the end users of its products but instead seeks to reach licensing agreements with certain partners and distributors. In 2007, company F entered into a joint venture agreement with a larger British pharmaceutical company (see Table 6). This joint venture agreement can be viewed as an effort to increase company F's presence in the Nordic markets. In addition, company F's market commitment represents a step towards developing its relationships with customers in these markets.

#### An example of a high committer: company G

Company G, which was established in 2000, sells microfluidic solutions for the life sciences industry. The equipment and services that the company sells are based on new technology that helps researchers within the life sciences industry to generate data more efficiently. The technology on which company G builds was previously developed by one of the large pharmaceutical groups situated in Uppsala. Company G, which was established as a spin-off from this group, received financial support from the parent group, as well as large investments from different venture capitalist firms. Company G used a vast portion of the investments to promote rapid and high-committed internationalisation in certain important markets. One year after company G was formed and before it even had any products ready to sell its first foreign sales subsidiary was established in the United Kingdom. The CEO described company G's plans for internationalisation as follows:

The management group agreed that we should be in the market 12–18 months before the sales would start.... You have to show what you can do with the technology before a company wants to buy a product that it does not know that it needs. From our perspective, this was also a period which gave feedback about the [market's] need for the product. (Excerpt from interview 07/02/2003)

Because company G's products are based on new technology, close proximity to its customers is required to convince them that its products work. It is also important for company G to receive instant feedback from its customers regarding the products' features so that company G can immediately offer help should the need arise.

In company G's second year, two additional sales subsidiaries were established, one in the United States and the other in Germany. In all three foreign sales subsidiaries, the sales staffs were recruited locally. Company G's management team believed that the recruitment of a local sales staff would help the company to increase its knowledge about cultural differences and to gain access to local customers.

Even though company G committed considerable resources to its most important markets, distributors were still used in markets that were regarded as less important. Company G's vice president (VP) of marketing stated the following:

A first link to new customers goes via distributors in the markets where we do not need our own sales subsidiaries. The distributors are, however, responsible for a lot of products and do not possess the same level of knowledge as our own sellers. Our sellers can go in and take an active role in the situations where the distributors, for example, need support to handle the end users. (Excerpt from interview 10/03/2003)

During its initial internationalisation, company G demonstrated a need to be physically present in its most important foreign markets to allow market penetration and frequent customer interaction to occur. In those cases where distributors were used, company G took an active role in enabling support to the end users of its products. Company G, thus, perceived a need to develop experiential knowledge of its foreign customers. The high commitment modes that the company used in its initial internationalisation facilitated the firm's development of foreign customer knowledge by enabling direct interaction with foreign customers and its own physical presence in foreign markets. However, the considerable resource commitment involved in establishing and maintaining its foreign customer relationships was costly. A large amount of venture capital was thus required from the outset.

During its continued internationalisation, company G's sales have not increased sufficiently, and the company has incurred losses. In an effort to reduce losses, the company's sales subsidiaries in the United Kingdom and Germany were phased out in 2007. However, its sales organisations in the United States and Sweden are being expanded. In addition, a greater number of distributors are being used to cover other markets. By implementing these changes, company G has decreased its resource commitments to relationships with its customers in the United Kingdom and Germany whilst increasing its resource commitments to relationships with its American customers.

Company H, the other high committer in the sample, experienced a rapid and high market commitment process during its initial internationalisation similar to that of company G. As a result of buying two other companies at the end of 2003, company H is in a position where it can restructure its product focus and create synergetic effects in its foreign marketing and sales. By 2007, company H increased its market commitment to new markets by opening sales subsidiaries in Switzerland, Italy, and Japan.

#### Concluding discussion

The purpose of this study was to explore which internationalisation modes Born Globals use during their initial and continued internationalisation. Three broad patterns of internationalisation behaviours were identified amongst the eight Born Globals under investigation. These patterns differ in terms of the Born Globals' level of resource commitments to foreign markets.

To begin their internationalisation, the *low committers* (companies A, B, C, and D) used low commitment internationalisation modes, such as direct export modes. Even though the low committers have increased their resource commitments to foreign markets, they have not engaged in high commitment modes or changed internationalisation modes during their internationalisation. These companies also perceive themselves as being on the right track and do not plan to make any higher commitments, such as establishing sales subsidiaries in foreign markets.

The *incremental committers* (companies E and F) also began their internationalisation using low commitment internationalisation modes. These companies' interactions with foreign customers are predominantly managed by their foreign distributors. In contrast to the low committers, the incremental committers change internationalisation modes in some markets during their continued internationalisation. By establishing relationships with foreign business partners (e.g., company D's strategic alliance with the German company; company E's joint venture with the British company), they increase their commitment to these specific markets.

The *high committers* (companies G and H) began their internationalisation by using high commitment internationalisation modes in their most important foreign markets and low commitment modes in less important foreign markets. These firms place great importance on being in close proximity to their most important foreign customers and on receiving instant feedback about the company's products. The changes made in the high committers' continued internationalisation, however, point to two different paths: (1) a continued increase in resource commitments and use of high commitment internationalisation modes (e.g., company H) and (2) a decrease in resource commitments demonstrated in the liquidation of high commitment internationalisation modes, such as foreign subsidiaries (e.g., company G).

In this study, we have contributed to international entrepreneurship research by exploring the continued internationalisation behaviours of Born Globals. By identifying three patterns of internationalisation behaviours, our findings support the argument made by Sharma and Blomstermo (2003) that there is no predetermined blueprint for Born Globals to follow in their internationalisation. The basis for the three patterns of internationalisation behaviours exhibited by Born Globals in this study is the difference in their use of internationalisation modes. This finding also supports the results presented in previous studies of high-tech SMEs,

which have demonstrated a great variety in the modes that these firms use during their internationalisation process (Bell, 1995; Crick and Jones, 2000). Interestingly, the high committers were the only group of Born Globals in our sample that started their internationalisation by simultaneously using multiple internationalisation modes, including both low and high commitment modes, thereby supporting the dominant view presented in existing Born Global research (Andersson and Victor, 2003; McDougall et al., 2003). By contrast, the internationalisation behaviours exhibited by the other two groups of Born Globals are in accordance with the view expressed in knowledge-based internationalisation process theory. These firms started their internationalisation using low commitment modes and-as evident in the case of the incremental committers-then incrementally increased their resource commitments during their continued internationalisation. Figure 2 shows the three groups of Born Globals and the internationalisation modes used in their continued internationalisation.

Our findings suggest that integrating knowledge-based internationalisation process theory and international entrepreneurship research can enhance the understanding of Born Globals' continued internationalisation. The dynamic perspective on firms' internationalisation modes presented in knowledge-based theory contributes to international entrepreneurship's more static view. An integration of these two theoretical perspectives is, therefore, highly relevant when the aim is to understand the changes in resource commitments exhibited by different groups of Born Globals during their continued internationalisation. High committers, for example, make substantial resource commitments to foreign markets in their initial internationalisation process. However, in their continued internationalisation, we found evidence that these companies decrease their resource commitments. Therefore, it seems that a rapid increase in resource commitments during the initial internationalisation processes of these firms is not necessarily followed by a further increase in resource commitments during their continued internationalisation processes. Similar behaviour has been identified by Crick and Spence (2005) in their study of the internationalisation of high-tech SMEs. Moreover, the low committers have not made any significant resource commitments during their continued internationalisation. Despite the fact that the low committers have been operating abroad for approximately a decade (9–13 years), these companies still use low commitment internationalisation

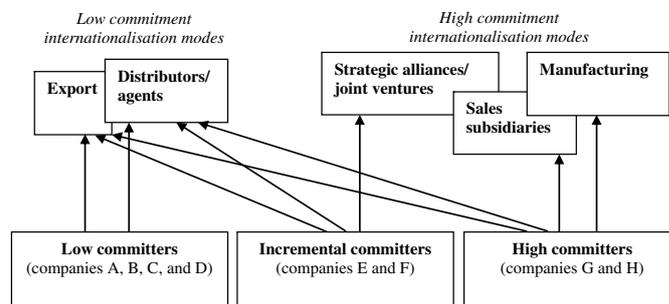


Figure 2 The three groups of Born Globals in their continued internationalisation.

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modes (e.g., engage in direct export and/or depend on distributors to reach their most important foreign markets) in 2008. These firms, therefore, demonstrate a comparatively slow pace of resource commitments made to foreign markets. In contrast to the other two groups of Born Globals, the incremental committers are those firms that have incrementally increased their resource commitments to foreign markets throughout their initial and continued internationalisation. As previously mentioned, this group of firms is the one that most clearly follows the dynamic internationalisation pattern suggested in the knowledge-based theory. In summary, we found that the speed at which resources are committed to foreign market operations varied greatly amongst these three groups of Born Globals.

Within international entrepreneurship research, Born Globals have stood out as examples of firms that achieve rapid internationalisation almost from the moment of their inception. The importance of speed for the international success of Born Globals has been a dominant view amongst Born Global scholars (Rialp et al., 2005). Born Globals are commonly defined as those firms that experience rapid internationalisation (i.e., initiate operations in several foreign markets within three years of founding and generate at least 25% of total sales from abroad) (Knight et al., 2004). However, in this study, we demonstrated that rapid initial internationalisation does not necessarily result in rapid continued internationalisation. In terms of the level of resource commitment, we also showed that the pace of internationalisation of one group of Born Globals changes during the course of its internationalisation: Its initial internationalisation developed rapidly, but its continued internationalisation has occurred slowly. The findings of this study, therefore, suggest that to understand the speed of internationalisation amongst Born Globals, research must, to a much greater extent, take these firms' continued internationalisation into consideration. To include only their initial internationalisation behaviour in the analysis provides limited understanding into the speed of internationalisation.

In addition to facilitating the study of the continued internationalisation of Born Globals, the integration of perspectives from knowledge-based theory and international entrepreneurship research contributes important insights into Born Globals' development of foreign customer knowledge. As shown in this study, differences in internationalisation modes used and resources committed amongst the firms under investigation are related to their development of foreign customer knowledge. The low commitment modes that the low and incremental committers used in their initial internationalisation made it more difficult for these firms to develop experiential knowledge about their foreign customers. By not making any changes in internationalisation modes during their continued internationalisation, the low committers did not facilitate their foreign customer knowledge development substantially. In comparison, the incremental committers changed internationalisation modes during their continued internationalisation and, thus, increased their possibilities of developing foreign customer knowledge by intensifying their relationships with foreign business partners. In contrast to the other two groups, the high committers used high commitment modes during their initial internationalisation, which enhanced their development of foreign customer knowledge. During

their continued internationalisation, the high committers showed different behaviours—one firm increased its resource commitments, whereas the other firm showed a decrease in resource commitments to foreign markets, thus affecting the two firms' possibilities of developing foreign customer knowledge in different foreign markets.

Previous research studies investigating Born Globals have suggested that foreign customer knowledge is important for the international success of these firms (Knight et al., 2004). Although this study indicates that the differences in internationalisation modes used by different groups of Born Globals relate to differences in their development of foreign customer knowledge, the results do not clearly show that one particular group of firms is more internationally successful than the others. Thus, future research should pay more attention to the speed at which Born Globals develop foreign customer knowledge in both their initial and continued internationalisation processes. Two critical questions for future investigators are, therefore, to find out how some Born Globals are able to develop foreign customer knowledge more rapidly than other firms and how this foreign customer knowledge is related to international success. We believe such research could provide new insights into the significance of speed for the international success of Born Globals.

#### Limitations and suggestions for future research

For the purpose of this study, we chose a sample of Born Globals that operates within the biotechnology field. In doing so, our aim was not to identify the multitude of challenges that biotechnology companies face in comparison to companies in other business areas. Scholars interested in the biotechnology field have, for example, discussed the finding that the high costs of R&D (clinical trials, etc.) often make the development of new products a lengthy and costly endeavour (Renko et al., 2005). These high costs also make most biotechnology companies dependent on capital, which forces them to search for financial actors who are prepared to take risks and are willing to wait to see a return on their investment (Waxell and Malmberg, 2007). We believe that future studies investigating the influence of these and other challenges on the internationalisation modes and the acquisition of foreign market knowledge for biotechnology companies would be relevant for the future development of this research field.

The results of this study indicated that the different product offerings of these case companies influence their use of internationalisation modes and acquisition of foreign customer knowledge. We also identified a deficiency in knowledge-based internationalisation process theory as it lacks a discussion of the influence of product-related factors on companies' acquisition of foreign market knowledge. However, because of space limitations, we could not include an indepth discussion about product-related factors and their influence on companies' internationalisation in this study. Based on the underlying assumptions of the transaction cost approach, scholars have demonstrated that product-related factors influence companies' use of overseas distribution channels (Anderson and Coughlan, 1987). Drawing on these findings, we believe that future research

should incorporate product-related factors into knowledge-based internationalisation process theory more thoroughly.

The case study approach is receiving greater scientific approval because it produces results with a high level of validity, from which generalisations can be drawn. However, the narrow scope of this study, which focused on a wide variety of Born Global case companies in one field of one cluster of one country, does not permit generalisations to be made based on our findings. Therefore, conducting quantitative studies in the future, from which generalisations can be derived, may prove useful.

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## **ARTICLE 6**

**SMEs' knowledge development in foreign markets: The effects of  
knowledge intensity**

Sara Melén

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**SMEs' knowledge development in foreign markets:  
The effects of knowledge intensity**

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**Abstract:** Existing research on small and medium-sized enterprises (SMEs) has emphasised that a firm's knowledge resources are a key predictor of its internationalisation. However, few studies have examined SMEs' knowledge development in foreign markets. The purpose of this study is to examine the effects of SMEs' knowledge intensity—the extent to which firms depend on the knowledge inherent in their activities and outputs as a source of growth— on their development of specific customer knowledge. The structural equation modelling technique LISREL was used to analyse data from 188 Swedish SMEs. The results contribute to SME research by showing that the knowledge intensity of a firm has positive direct effects on its development of in-depth knowledge about its foreign customers' needs, demands and ways of solving problems. Knowledge intensity also has positive indirect effects on the development of such specific customer knowledge when mediated by the SME's international knowledge.

**Keywords:** SMEs; small and medium-sized enterprises; knowledge development in foreign markets; knowledge intensity; specific customer knowledge; international knowledge; internationalisation; SME research; behavioural internationalisation process theory

## **1 Introduction**

As a growing number of small and medium-sized enterprises (SMEs) start to operate abroad, it has become increasingly important to understand and explain their internationalisation. Existing SME research has emphasised that a firm's knowledge resources are a key predictor of its internationalisation (Yli-Renko, Autio, and Tontti, 2002). However, there is still a lack of studies that examine SMEs' knowledge development in foreign markets (Zahra, 2005), which is surprising because such research could provide important insights into how SMEs succeed in becoming international.

In the ongoing discussion of SMEs' internationalisation, both technological knowledge and knowledge about foreign customers have been emphasised as important for international success (Knight, Madsen, and Servais, 2004; Zahra, Ireland, and Hitt, 2000). Moreover, a firm's technological knowledge (often analysed by studying the firm's knowledge intensity) has been argued to increase the firm's ability to develop new knowledge (Autio, Sapienza, and Almeida, 2000). Despite those arguments, previous studies have not looked at how the knowledge intensity of an SME influences its development of customer knowledge in foreign markets. The purpose of this study is to examine the effects of SMEs' knowledge intensity on their development of specific customer knowledge—that is, on their development of in-depth knowledge about a foreign customer's needs, demands and ways of solving problems. Based on previous research (Autio, Sapienza, and Almeida, 2000, p.913), this study defines 'knowledge intensity' as the extent to which a firm depends on the knowledge inherent in its activities and outputs as a source of growth.

For the purpose of this analysis, arguments from existing SME literature are integrated with behavioural internationalisation process (IP) theory. IP theory is particularly effective for understanding SMEs' knowledge development in foreign markets because it emphasises knowledge as the critical resource in firms' internationalisation (Johanson and Vahlne, 1977). Knowledge development is seen as a firm's accumulation of experience from operating in foreign markets. Like SME literature, IP theory also emphasises the development of specific customer knowledge. Compared with SME literature, however, IP theory has not been concerned with the effects of a firm's knowledge intensity on its knowledge development. Instead, IP theory has highlighted that an important antecedent to a firm's development of specific customer knowledge is the stock of knowledge it accumulates from operating in different geographical locations—what this study refers to as 'international knowledge' (Eriksson *et al.*, 1997). In addition to examining the relationship between SMEs'

knowledge intensity and their development of specific customer knowledge, this study looks at how SMEs' international knowledge influences that relationship.

By using IP theory to analyse the effects of SMEs' knowledge intensity on their knowledge development in foreign markets, this study can contribute new insights to research about SMEs' internationalisation in several ways. First, it contributes to SME research by hypothesising that knowledge intensity has a positive effect on the development of specific customer knowledge. Previous studies have not tested that relationship or the effects of knowledge intensity on SMEs' knowledge development in foreign markets. Second, IP theory has identified that a firm's international knowledge is an important antecedent to its development of specific customer knowledge. SME literature, however, has paid only limited attention to the importance of a firm's international knowledge and has not previously examined how knowledge intensity can affect an SME's use of international knowledge. Therefore, this study contributes to SME research by studying both direct and indirect effects of a firm's knowledge intensity on its knowledge development in foreign markets.

## **2 SME literature**

The past two decades have witnessed an increasing interest in the internationalisation of SMEs. Whilst international business studies initially focused on large multinational companies, studies have acknowledged the growing focus on SMEs' internationalisation within the field (Acs, Dana, and Jones, 2003; Dana, Etemad, and Wright, 1999). One aspect that has attracted considerable interest is the knowledge resources of SMEs and how these resources influence their internationalisation (Nummela, Puumalainen, and Saarenketo, 2005; Ratten *et al.*, 2007; Young, Dimitratos, and Dana, 2003). More specifically, the knowledge intensity of an SME is believed to be of importance for its internationalisation (Bell *et al.*, 2003) and its performance (Zahra, Ireland, and Hitt, 2000). For a knowledge-intensive SME, knowledge is critical and used in activities such as developing new offerings, improving productivity, introducing new methods of production and/or improving service delivery (Bell *et al.*, 2003).

In their research on international new ventures (INVs), Oviatt and McDougall (1994) have elaborated on how the knowledge intensity of a firm influences its internationalisation. Oviatt and McDougall indicate that the knowledge intensity of a new small firm enables it to expand instantly into foreign markets because the great mobility of a firm's technological resources allows a new company to combine those resources rapidly and

flexibly with less mobile resources in foreign markets. Based on the work of Oviatt and McDougall, some scholars have expanded on the arguments about the effects of knowledge intensity by using arguments from organisational learning theory. They have suggested that knowledge intensity influences a firm's international growth through its positive effect on the firm's knowledge development (Autio, Sapienza, and Almeida, 2000). Their findings suggest that knowledge intensity can enhance a firm's ability to recognise and assimilate new knowledge—an ability that is often referred to as the firm's absorptive capacity (Cohen and Levinthal, 1990).

SME research has also revealed that an SME's network of business relationships with customers, suppliers and partners can facilitate its internationalisation (Bell, 1995; Coviello and Munro, 1997; Dana, Etemad, and Wright, 2004). Some scholars have specifically shown that focusing on customers and developing close relationships with them allow a small firm to operate efficiently and concentrate its limited resources (Knight, Madsen, and Servais, 2004). Moreover, it is argued that focusing on meeting the needs of customers and adapting its products to fit the needs of a specific market are essential to the international success of a small firm (Knight, Madsen, and Servais, 2004). However, the small internationalising firm might need to develop new knowledge to manage its relationships with customer companies (Dana and Wright, 2004; Wright and Dana, 2003), such as knowledge about the needs and demands of customer companies. SME research has indicated that such knowledge is important for the success of the firm's internationalisation (Bell *et al.*, 2003; Knight, Madsen, and Servais, 2004).

### **3 IP theory**

Internationalisation process theory (Johanson and Vahlne, 1977) views internationalisation as the process of increasing the accumulation of knowledge in markets and institutions abroad. This process takes place within the framework of international business relationships with foreign customers, suppliers, distributors and partners (Blomstermo *et al.*, 2004). Firms' development of knowledge about foreign markets, seen as experience of foreign market operations, is critical because it reduces firms' uncertainty about internationalisation and enhances their commitment of resources to a foreign market. Such knowledge—referred to as 'experiential knowledge'—thus provides a firm with the ability to search, analyse and take action in foreign markets (Blomstermo *et al.*, 2004).

A firm develops experiential knowledge through its activities abroad, which take place in interaction with foreign customers, suppliers, distributors, etc. A firm's activities in foreign markets are both the source and the result of its development of experiential knowledge because the firm continually applies lessons learned from past experience to future activities (Blomstermo *et al.*, 2004). Knowledge development within the internationalisation process is, therefore, cumulative and path dependent (Lane and Lubatkin, 1998; Madhok, 1997).

One kind of experiential knowledge that studies have identified as important for an internationalising firm is market-specific knowledge (Eriksson *et al.*, 1997). This type of knowledge includes knowing about customers, competitors and market conditions in a specific foreign market, as well as knowing about government and institutional frameworks in that particular country. The market-specific experiential knowledge applicable to this study is knowledge of a specific customer in a market—what this analysis calls 'specific customer knowledge'. Such knowledge is developed in a firm's interaction with a specific customer, when problems are detected and actions are taken to correct them. This type of knowledge has limited applicability outside the particular customer interaction in which it has been developed.

Another kind of experiential knowledge that has been shown to be important for an internationalising firm is its accumulated stock of experiential knowledge developed from interacting with foreign counterparts from various locations. This so-called international knowledge concerns a firm's knowledge about its own resources and ability to engage in foreign operations (Chetty, Eriksson, and Lindbergh, 2006; Eriksson *et al.*, 1997). Unlike specific customer knowledge, international knowledge is not specific to any particular business relationship or foreign market.

#### **4 Hypothesis development**

As described previously in this paper, studies have emphasised that in a small company's internationalisation, it is important to understand and concentrate on meeting customer needs (Knight, Madsen, and Servais, 2004). Scholars studying knowledge-intensive SMEs have, furthermore, indicated that the knowledge intensity of a firm is related to the need to supply specific knowledge about the firm's product and its uses to a customer company (Bell, 1995, 1997; McNaughton, 2002). Small knowledge-intensive firms must be able to provide extensive client support, in terms of consultancy, customisation, installation, training,

upgrading and after-sales service (Bell *et al.*, 2003). This requires that an internationalising firm be able to handle both its knowledge-intensive product and any accompanying problems that occur in the customer relationship. The findings presented in those studies thus indicate that knowledge intensity may influence a firm's development of knowledge about its customers. Bell *et al.* (2003) also suggest that the high levels of pre- and after-sales services that a knowledge-intensive firm must supply require essential knowledge from the internationalising firm.

Studies within the field of SME research that have used organisational learning theory to understand the effects of knowledge intensity offer support for the idea that knowledge intensity has a positive effect on firms' knowledge development (Autio, Sapienza, and Almeida, 2000). Within organisational learning theory, some researchers have argued that knowledge intensity enhances not only a firm's knowledge about certain areas of technology but also its knowledge about how those areas relate to the firm's products and markets (Cohen and Levinthal, 1989). A firm's ability to develop new knowledge is greatest when the new knowledge to be assimilated is related to what the firm already knows (Cohen and Levinthal, 1990). From an interorganisational perspective, these arguments imply that if a firm has a general understanding of technology that relates to the other firm's knowledge, it will have a positive effect on knowledge development in the relationship between the two firms (Lane and Lubatkin, 1998).

Based on these arguments, this study suggests that knowledge intensity can enhance a firm's ability to develop specific customer knowledge. In interactions with a foreign customer, knowledge intensity gives a firm a general understanding about how its technology and knowledge relate to the foreign customer's knowledge. In this way, knowledge intensity enhances an SME's ability to recognise and assimilate knowledge about the needs and demands of a specific foreign customer and the customer's way of solving problems. The following relationship is, therefore, hypothesised:

*H1*: Knowledge intensity has a positive effect on an SME's development of specific customer knowledge.

The field of IP theory shows the importance of an internationalising firm's stock of experience from interacting with counterparts from various locations (Eriksson *et al.*, 1997). The international knowledge that a company develops from those experiences is important

because it gives the firm knowledge about its own resources to engage in operations abroad. In doing so, such knowledge enhances the firm's ability to understand common characteristics among customers, irrespective of their geographical location, and to interact with foreign counterparts in a successful manner. Thus, a firm's international knowledge enhances its ability to develop knowledge in its relationships with specific counterparts (Blomstermo *et al.*, 2004). Chetty, Eriksson, and Lindbergh (2006) have also found that the more international experience a company has developed, the more important it perceives market-specific knowledge to be. In addition, a firm's international knowledge has been shown to have consequences for performance (Blomstermo *et al.*, 2004).

In the field of SME research, studies have emphasised that a founder's or manager's international knowledge is important for a firm's internationalisation (Andersson and Wictor, 2003; Crick and Jones, 2000). However, few scholars have examined the influence of international knowledge at the firm level. This is a notable limitation in SME literature; without such studies, SME research can offer only limited insights into a firm's foreign market operations. Those scholars who have touched on SMEs' use of firm-level international knowledge have indicated its importance for an SME's performance abroad (Sharma and Blomstermo, 2003). They argue that an SME's international knowledge enables it to recognise and assimilate new knowledge in its relationships with foreign counterparts. Based on IP research, it is indicated that the ability of an SME to use its international knowledge is an important feature that can distinguish success from failure (Blomstermo *et al.*, 2004). On the basis of those various arguments, it appears that international knowledge enhances an SME's ability to develop knowledge about the needs and demands of a specific foreign customer and the customer's ways to solve problems. Thus, this study also hypothesises the following relationship:

*H2:* International knowledge has a positive effect on an SME's development of specific customer knowledge.

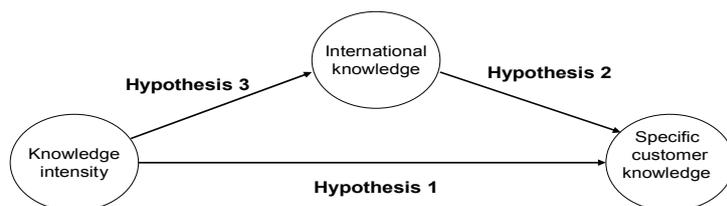
Few scholars have examined the relationship between knowledge intensity and an SME's ability to use its international knowledge when operating in foreign markets. Based on the arguments presented in SME research about the positive effects of knowledge intensity on knowledge development (Autio, Sapienza, and Almeida, 2000), it could be that knowledge intensity also enhances a firm's ability to use its experiential knowledge developed in

international business relationships. Moreover, as described earlier, knowledge intensity has been argued to enhance a firm's knowledge about how its existing knowledge relates to its products and markets (Cohen and Levinthal, 1989). Building on those arguments, this study suggests that knowledge intensity can enhance an SME's ability to understand how its existing experiential knowledge of international business relationships relates to its current interaction with a specific foreign customer. In this way, an SME's knowledge intensity can enhance the firm's ability to use its international knowledge in its relationship with a specific foreign customer. Therefore, this study also hypothesises a third relationship:

*H3*: Knowledge intensity has a positive effect on an SME's use of international knowledge.

The three hypotheses can be put together in a hypothesised structural model (shown in Figure 1). On the basis of both IP theory and SME literature that shows the importance of specific customer knowledge for a firm's internationalisation, the dependent variable in the model is specific customer knowledge. *H1* is based on arguments in SME literature indicating that knowledge intensity can improve a firm's ability to develop new knowledge. *H2* builds on IP theory, which highlights the importance of a firm's international knowledge. *H3* integrates arguments from IP theory and SME literature.

**Figure 1** Hypothesised structural model



## **5 Methodology**

To test the hypotheses, this study examines the results of a questionnaire-based survey that was distributed to a random sample of 339 Swedish SMEs in the Mälardalen area in 2004 and 2005 (using data from Statistics Sweden's Business Register). The sample includes all types of business sectors, and all of the surveyed firms have at least 10% of their turnover from export activities.

The questionnaire is based on a combination of questions about a scenario: a real-life international assignment of critical importance to the responding firm. (An excerpt of the definition of an international assignment can be found in Appendix 1.) The questionnaire is divided into three parts. Part one is designed to collect general information about the firm that cannot be found from secondary sources. Part two attempts to define the firm's relationship with a specific international business partner (i.e., a customer, a distributor or another intermediary). Part three tries to map the local and international business network of the firm and identify the actors involved in the specific business relationship. That part of the questionnaire also asks about the firm's knowledge drawn from past experiences. After our research group had created the first draft of the questionnaire, it was tested on six SMEs. The test indicated that the questionnaire was too extensive in length. Our research group decided to shorten the questionnaire and certain expressions that the respondents had found confusing were modified. In addition to the questionnaire, background data about the firms were collected from the database Affärsdata. Those objective data include information about a company's age, size, exports and year of international presence, as well as financial information and information about products. In all, the objective data encompass 29 variables.

After the sampled SMEs were contacted by telephone, some firms were excluded from the sample because they are too large to be considered SMEs, they do not sell to foreign customers (and thus do not manage any foreign relationships) or they no longer exist. After such exclusions, the total sample numbered 233 SMEs. The questionnaire was distributed to those companies by personally visiting them and meeting the key informants involved in international activities. That procedure ensured that the right person answered the questionnaire, which increased the reliability of the data collection. The title of the key informant varies among these SMEs; thus, the sample includes chief executive officers (CEOs), marketing managers and export managers.

From the sample of 233 SMEs, 188 questionnaires were collected, for a response rate of 81%. The two major reasons why some firms did not participate were lack of time and resistance to giving out information. Although a response rate of 81% is high compared with similar studies, a non-response bias has been considered. Because the surveys were collected at a scheduled meeting with the respondents, it was not possible to detect non-response bias by applying a common test like comparing early and late responses (Armstrong and Overton, 1977). Secondary data from Statistics Sweden's Business Register were instead used to control for differences in industry, size, location and level of internationalisation between responding and non-responding firms. No differences between the groups were found; therefore, a non-response bias is not likely to be a problem in interpreting the results of this study.

## **6 Data analysis**

The survey results were analysed using the LISREL method, a structural equation modelling technique that traces structural relations in a set of data (Jöreskog and Sörbom, 1993). LISREL is based on two components: a set of indicators that are used to represent a higher-order variable and causal relations between the higher-order variables. This higher-order variable is the construct, which represents latent common properties of the indicators.

The validity of a LISREL model is assessed in two steps. The first step involves assessing the validity of the constructs to ensure that the indicators are valid measures of the theoretically deduced construct. Convergent validity is used to test for the homogeneity of constructs by analysing the  $R^2$ -values,  $t$ -values and coefficients of each relationship in the model.  $R^2$ -values indicate the degree of linearity of a relationship; the general rule is that an  $R^2$ -value needs to be 0.20 or higher for the linearity of a relationship to be acceptable (Hair *et al.*, 1998). There is, however, no definitive threshold value, which means that lower  $R^2$ -values can be accepted if they can be explained by theoretical arguments (Eriksson, 1998). The  $t$ -value is a standard estimate of statistical significance and should be 1.96 or higher at the 5% significance level (Jöreskog and Sörbom, 1993, p.107). Discriminant validity is used to control for the extent of separation between constructs; in testing for discriminant validity, an approximate confidence interval for the correlation between constructs can be created, using the standard error. For the constructs to be unidimensional and the model discriminant, the confidence interval should not include 1 (Jöreskog and Sörbom, 1993). A further test of the validity of the constructs can be performed by creating a measurement model with no causal

relations (Jöreskog and Sörbom, 1993, pp.15-19). The measurement model should be statistically valid, and the model should confirm that the correlations between the constructs are significant and do not equal 1. The measurement model also controls for discriminant validity, in confirming that the indicators for each construct do not load for any other construct.

In the second step, the validity of the entire model is assessed, which means that nomological validity is tested. Following the recommendation of Jöreskog and Sörbom (1993, pp.111-131), the validity of the entire model is measured here with  $\chi^2$  and probability measures, which indicate the match between model and data. In accordance with Chetty, Eriksson, and Lindbergh (2006), this study uses three common measures: the goodness-of-fit index (GFI), the root mean square error of approximation (RMSEA) and the comparative fit index (CFI). The GFI checks for sample-size effects and should be above 0.90. The RMSEA measures population discrepancy per degree of freedom and should be below 0.08. The CFI checks for non-normal distributions and should exceed 0.90.

To further test the model, the LISREL method allows group analysis to be carried out, which tests for equivalence across groups and assumes that the key statistics of the structural model are equal across groups. The three major components of a structural model that are being set equal across groups are construct relations, indicator relations and error covariances (Jöreskog and Sörbom, 1993, p.53). If the estimates for validity are not confirmed in the group analysis, the structural model differs between groups.

## **7 Construct analysis**

The construct 'knowledge intensity' is intended to capture the extent to which a firm depends on the knowledge inherent in its activities and outputs as a source of growth. Both objective and subjective measures can be used to measure a firm's knowledge intensity. However, objective measures such as research and development (R&D) spending and number of patents have received criticism. Some researchers have concluded that R&D spending is not an appropriate measure of knowledge in the case of small, newly started firms because these companies have no sales in their first year of existence (Eisenhardt and Schoonhoven, 1990) and often lack a distinct R&D department, making it difficult to assess this indicator (Autio, Sapienza, and Almeida, 2000). Other researchers note that the commonly used measure number of patents can reflect a strategic choice on the part of a firm, thus saying little about the firm's actual knowledge (Spender and Grant, 1996). Such critics prefer various subjective

measures of knowledge intensity, including managers' assessment of the knowledge embedded in products and services and a firm's reputation for technological excellence (Autio, Sapienza, and Almeida, 2000).

This study uses both objective and subjective measures to capture firms' knowledge intensity (see Table 1). Number of patents is used as an objective measure. However, because of the criticism directed at that measure, two subjective measures of knowledge intensity have been added to the construct. Those measures are 'Our customers depend on us for their product/service development' and 'We depend on our five largest customers for our product/service development'. Both subjective indicators reflect the fact that a firm's knowledge intensity is connected to the company's network (Sharma and Blomstermo, 2003). The first indicator also captures an SME's degree of technological and knowledge excellence. The two subjective indicators are measured on a seven-point Likert scale (1 = not at all; 7 = completely). The *t*-values for the two subjective measures are 4.64 or higher, and the *R*<sup>2</sup>-values are 0.32 or higher. The objective measure, number of patents, is a continuous variable, which has been logarithmically transformed. The *t*-value for the objective measure is 3.08, and the *R*<sup>2</sup>-value is 0.14, which indicates a weak linearity in this particular relationship. However, because of the theoretical relevance of this measure, we still find it relevant to form this construct.

The second construct, 'international knowledge', captures a firm's international experience of interacting with foreign counterparts, regardless of their location. Previous research has measured this construct on the basis of a firm's perceived experience of foreign market operations (Blomstermo *et al.*, 2004). Likewise, this study measures international knowledge by relying on three subjective indicators that capture a firm's experiential knowledge developed in its relationships with international customers and suppliers (see Table 1). The three indicators are as follows:

1. To what extent is the chosen business contact dependent on your previous experiences of international customers' development of procedures?
2. To what extent is the chosen business contact dependent on your previous experiences of international customers' modernity, original ideas and contribution to new business opportunities?
3. To what extent is the chosen business contact dependent on your previous experiences of international suppliers' knowledge?

All of those indicators are measured on a seven-point Likert scale (1 = not at all; 7 = completely). The *t*-values for the measures are 4.99 or higher, and the *R*<sup>2</sup>-values are 0.28 or higher, indicating good convergent validity for the construct.

The third construct, ‘specific customer knowledge’, captures a firm’s in-depth knowledge about a foreign customer’s needs, demands and ways of solving problems. One way of operationalising market-specific knowledge, which has been used in prior research, is to employ measures that reflect important ways in which an internationalising SME can develop such knowledge (Eriksson *et al.*, 1997). Therefore, this study uses three measures that reflect important means by which an SME can develop specific customer knowledge (see Table 1): (1) if the business relationship is characterised by dense information exchange, (2) if it is characterised by common problem solving and (3) how much the internationalising SME knows about its business partner’s way of solving problems. All three indicators are measured on the seven-point Likert scale (1 = not at all; 7 = completely). *T*-values for the measures are 5.85 or higher, and *R*<sup>2</sup>-values are 0.24 or higher, indicating good convergent validity for this construct.

**Table 1** The constructs and their indicators

<i>Construct indicator</i>	<i>Abbreviation in Figure 2</i>	<i>Factor loading</i>	<i>t-value</i>	<i>R<sup>2</sup> value</i>
<i>Knowledge intensity</i>				
Our customers depend on us for their product/service development.	QUECOM3	0.56	4.86	0.32
We depend on our five largest customers for our product/service development	QUECOM2	0.60	4.64	0.37
How many patents does your company have? (log transform)	PATENT	0.38	3.08	0.14
<i>International knowledge</i>				
To what extent is the chosen business contact dependent on your previous experiences of international customers’ development of procedures?	EXPICU3	0.78	n.a.	0.61
To what extent is the chosen business contact dependent on your previous experiences of international customers’ modernity, original ideas, contribution to new business opportunities?	EXPICU5	0.74	5.72	0.55
To what extent is the chosen business contact dependent on your previous experiences of international suppliers’ knowledge?	EXPISU4	0.53	4.99	0.28

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*Specific customer knowledge*

The relationship is characterised by:

-dense information exchange	RELBR2	0.62	n.a.	0.39
-common problem solving	RELBR9	0.93	6.55	0.86

In the relationship, how much is known about the business partner's way of solving problems?	FAMIBR6	0.49	5.85	0.24
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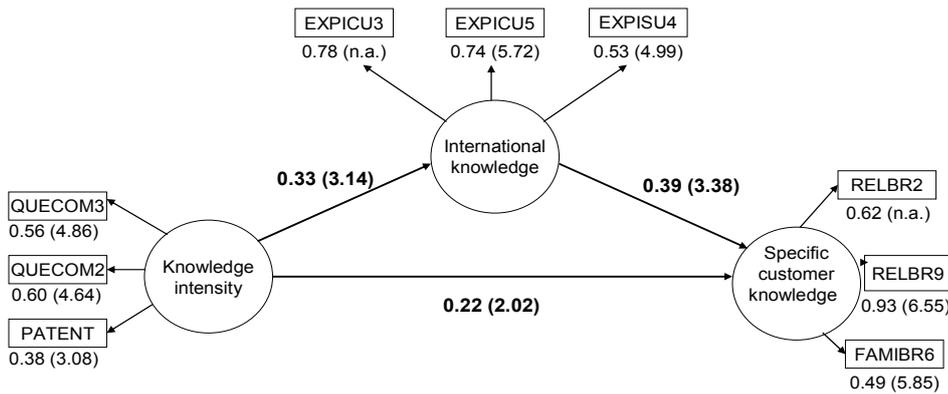
The 90% confidence interval for the correlation between constructs shows that all constructs in the model are discriminant. In addition, a measurement model with no causal relations was created. That model's key statistical measures are valid because its  $\chi^2$  is 30.48 with 22 degrees of freedom at a probability of 0.10736. The measurement model also shows that the correlations between the constructs are significant and not equal to 1, which confirms construct validity. Moreover, the measurement model shows that the indicators for each construct did not load for any other construct, and discriminant validity is once again confirmed. Pairwise deletion was used to account for missing values. The results were also tested by listwise deletion, and similar results were received.

## **8 Results**

In this study, the effects of knowledge intensity on SMEs' development of specific customer knowledge have been tested. Based on the theoretical arguments presented in IP theory and SME research, a structural model was made with specific customer knowledge as the dependent construct. (The model is displayed in Figure 2.) The model's key statistics are acceptable because  $\chi^2$  is 30.48 with 22 degrees of freedom at a probability of 0.10736. The RMSEA is 0.045, the GFI is 0.97, and the CFI is 0.97, all of which support nomological validity. Because the model is valid, we can proceed to analyse the results of the causal model.

**Figure 2** Effect of knowledge intensity on development of specific customer knowledge.

**Notes:** Values given are coefficients (*t*-values in parentheses). Model  $\chi^2$  is 30.48 (22 d.f.), *p*-value 0.10736. (An error covariance between QUECOM2 and PATENT, as well as between EXPICU3 and EXPISU4, is added.)



The results shown in Figure 2 demonstrate that knowledge intensity has a positive effect on SMEs' development of specific customer knowledge (0.22; 2.02), which supports hypothesis 1. Previous studies have indicated that knowledge intensity enhances a firm's ability to develop new knowledge (Autio, Sapienza, and Almeida, 2000). *H1* supports that argument and specifically suggests that knowledge intensity enhances an SME's ability to understand how its existing knowledge and technology relate to a foreign customer's knowledge. This ability in turn explains the result that knowledge intensity enhances an SME's development of specific customer knowledge.

The results also show that international knowledge has a positive effect on an SME's development of specific customer knowledge (0.39; 3.38), supporting *H2*. Findings in the field of IP theory have shown that international knowledge is important for enhancing a firm's ability to develop knowledge in its relationships with specific counterparts (Blomstermo *et al.*, 2004). *H2* supports IP theory and shows that international knowledge is important for an SME's ability to develop specific customer knowledge. *H3*, furthermore, shows that knowledge intensity has a positive effect on an SME's use of its international

knowledge (0.33; 3.14). This result explains that knowledge intensity can also enhance a firm's ability to use the knowledge it developed in previous international business relationships. This result is important because it shows that knowledge intensity also has indirect positive effects on an SME's development of specific customer knowledge when international knowledge is used (0.13, 2.54).

Within SME research, scholars focusing on the internationalisation of INVs have suggested that firms that start their internationalisation from inception or soon thereafter show a different pattern of knowledge development (Blomstermo, Eriksson, and Sharma, 2004). An often-used measure for operationalising these SMEs is whether they have had their first foreign sale within three years of inception (see Knight, Madsen, and Servais, 2004). Thus, this model was tested further by dividing the sample into SMEs that had their first foreign sale within three years of inception (115 firms) and SMEs that had their first foreign sale later (73 firms). The group analysis shows that the structural model differs between these two groups. For SMEs that started their internationalisation within three years, knowledge intensity has no significant direct effects on their development of specific customer knowledge (coefficient =  $-0.05$ ,  $t = -0.34$ ). Knowledge intensity has only a positive effect on these SMEs' development of specific customer knowledge when mediated by their international knowledge (coefficient =  $0.26$ ,  $t = 2.06$ ). For SMEs that started their internationalisation long after inception, knowledge intensity has no significant indirect effects on development of specific customer knowledge (coefficient =  $-0.09$ ,  $t = -0.63$ ). Knowledge intensity has only a direct positive effect on these firms' development of specific customer knowledge (coefficient =  $0.49$ ,  $t = 2.66$ ).

One explanation for this result could be that SMEs that started internationalising long after inception experienced a long duration of domestic operations before commencing foreign operations. Their stock of experiential knowledge is based on domestic operations. Previous studies have shown that domestic experience in fact can inhibit, rather than facilitate, firms' development of knowledge in foreign markets (Rialp, Rialp, and Knight, 2005). Blomstermo, Eriksson, and Sharma (2004) found that the duration of domestic activities prior to the inception of foreign market operations is fundamental for a firm's development of experiential knowledge and that firms with long domestic market experience have difficulty recombining their existing experiential knowledge in the internationalisation process. Thus, SMEs that start to operate abroad long after inception may have problems relating their domestic experiences to foreign operations, and the knowledge intensity of these

SMEs cannot enhance their ability to use international knowledge. In comparison, SMEs that start their internationalisation shortly after inception find it easier to use international knowledge in their relationships with foreign customers.

## **9 Discussion**

Research on the internationalisation of SMEs states that a key focus for these firms is understanding and concentrating on meeting the needs and demands of foreign customers. SME research has also found that the knowledge intensity of a firm has a positive effect on its internationalisation. Although researchers have indicated that knowledge intensity could enhance a firm's ability to develop new knowledge, there has been a lack of studies examining the knowledge development of SMEs in foreign markets. This study contributes to research on SMEs' internationalisation by examining the effects of SMEs' knowledge intensity on their development of specific customer knowledge. In doing so, this study can shed new light on SMEs' knowledge development in their internationalisation.

Based on arguments in IP theory about firms' knowledge development in foreign markets, this study has shown that knowledge intensity has positive effects on SMEs' knowledge development. Those results are important because they provide evidence that knowledge intensity actually makes it easier for an SME to develop new knowledge about its customers abroad. For this reason, the results of this study highlight that an SME's knowledge intensity could facilitate its internationalisation. More important, this result also holds when SMEs have developed international knowledge and use it in their foreign market operations. SME literature has been less concerned with examining the impact of international knowledge at the firm level. IP theory, by contrast, has emphasised that a firm's international knowledge is an important antecedent to the firm's development of specific knowledge in its relationships abroad. This study, therefore, contributes to SME literature by showing that SMEs that use their international knowledge can find it easier to develop specific customer knowledge abroad. Moreover, knowledge intensity can enhance an SME's use of its international knowledge, thereby also indirectly affecting an SME's development of specific customer knowledge.

The results of this study, however, also show that the effects of knowledge intensity on knowledge development differ among SMEs, depending on the number of years from inception that they start to operate abroad. For SMEs that begin operating abroad long after inception, the indirect effects of knowledge intensity are not significant. Interestingly,

for SMEs that start internationalising in their first three years, knowledge intensity has significant indirect effects, but no significant direct effects, on the development of specific customer knowledge. One reason could be that a long duration of domestic operations can inhibit these firms' ability to use international knowledge. However, the results call for further research into the knowledge development processes of SMEs, particularly how the effects of a firm's knowledge intensity are related to its duration of domestic operations and development of domestic experience. Future studies should also test the effects of knowledge intensity by using other measures of knowledge intensity. There is an important debate existing of which measures to use in examining a firm's knowledge intensity, and future studies should add to the discussion.

This study has contributed important insights into SMEs' knowledge development in foreign markets. The results have at the same time presented new questions that should be given attention in future research. In addition, this study has not examined the performance effects or the internationalisation process itself. To increase understanding of how SMEs succeed in their operations abroad, future research should, therefore, add performance measures to a model of SMEs' knowledge development in foreign markets.

### **10 Managerial implications**

An internationalising firm should put great effort into developing its knowledge of foreign customers: particularly, what problems, needs and demands its customers have. If an internationalising firm has invested in its development of technological knowledge, it will have an easier time developing knowledge about foreign customers. The firm's technological knowledge can also help it develop knowledge from its previous experiences of operating abroad. Therefore, developing technological knowledge can make it easier for a firm to understand how to do business abroad.

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**Appendix 1: definition of an international assignment**

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.



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