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# Competitive Capabilities of a Technology Born Global

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*To my wonderful parents*



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*Liliya Altshuler*

Copenhagen, March 2012

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# Chapter 1

## Introduction

Born globals are emerging in substantial numbers worldwide, and likely reflect an emergent paradigm, with the potential to become a leading species in the ecosystem of international trade. In this sense, the born-global phenomenon is heartening because it implies the emergence of an international exchange system in which any firm, regardless of age, experience, and tangible resources, can be an active international business participant. (Knight and Cavusgil, 2004:137)

Since the early 1980s, rapidly internationalizing start-ups have captured attention of the academia, media, international institutions and governments. These start-up firms seem to disregard the traditionally established views of firm internationalization. In spite of the significant resource limitations, they manage to reach international markets rapidly and keep their competitive position in the long term, running against international players of various sizes with different levels of resource availability. Clearly, born globals represent a completely new type of firms, which is re-drawing the landscape of international business.

For decades, internationalization used to be an expensive process, which most often required direct investment into new countries or regions and therefore, was out of reach for start-up ventures. The traditional theories of internationalization – “The Uppsala internationalization Model (U-M)” (Johansson & Vahlne, 1977) and “The Innovation-Related Internationalization Model (I-M)” (Bilkey, 1978) postulated that firms become international in a slow and incremental manner, which may be due to the lack of knowledge about foreign markets, high risk aversion, high perceived uncertainty, or similar factors. The

empirical data, more often than not, supported the theories in showing that firms internationalize like “rings in the water”- building their market knowledge gradually and reducing risk uncertainty by entering new countries slowly over time (review by Madsen & Servais, 1997).

However, since the 1980s, rapid technological progress has been altering the understanding of firm internationalization, giving young firms a wider choice of options as for their operations, choice of markets and ways of reaching these markets. Besides the life-changing technological developments, such as the internet and web-based communication solutions, the general globalization forces have added to the trend. Opening up of new significant markets, such as China and Eastern Europe, loosening of regulations within the European Union, the common Eurozone, other regional agreements, the general tendency toward collaboration among the world’s leading economies, rapid development of the Arabic and the BRIC countries – these and other trends have enabled emergence of a truly international economy. These developments have been followed by growth in university programs in international business, growing international mobility of work force, and the continuously increasing number of professionals with international business experience and networks. These professionals, as well as highly technically educated specialists and scientists are often the people founding and developing born globals (Boter & Holmquist, 1996).

A distinguishing feature of these entrepreneurial start-ups is that they do not view their home market as a starting base. Instead, they start with a relatively ‘borderless’ view of operations and develop the necessary strategies and make resource commitments to achieve their international goals at or near the firms’ founding (Knight & Cavusgil, 2004; Knight *et al*, 2004).

Many born globals are based on unique technologies and often offer a leading technology in a specific market niche or segment. Many of the firms operate in B2B markets, since reaching customers in B2B

environments is much more viable with limited resources than marketing and catering to the needs of vast consumer markets (Luostarinen & Gabrielsson, 2002). The firms practice a relatively borderless approach to resource sourcing – they combine international talent and collaborate with foreign partners to develop products and technologies.

Born globals are characterized by the strong innovative and international entrepreneurial culture (Knight & Cavusgil, 2004). Faced with the lack of economies of scale, lack of resources (financial and knowledge), aversion of risk (Freeman *et al*, 2006), as well as the liabilities of foreignness and newness (Zaheer, 1995), born globals still manage to rapidly enter numerous foreign markets and sustain their competitive advantage there. Studies show that born globals early on develop an international entrepreneurial culture and the related organizational orientations (Dimitratos & Plakoyiannaki, 2003; Knight & Kim, 2009; Knight & Cavusgil, 2004), which build up the capabilities that enable these firms to be agile, quick to recognize and seize international opportunities, and adjust their internal processes to operate in versatile foreign markets. These young ventures have an advantage over older and more established organizations in their youth and flexibility, and in being free from the deeply embedded organizational routines that may inhibit the development of internationally-oriented processes in older companies (Autio *et al*, 2000).

Born globals employ highly networked approaches to entering new markets, often through hybrid governance structures and without making significant resource commitments to these countries. Vertical and horizontal network relationships are used to rapidly gain access to international markets, to partners' marketing infrastructure, leverage their marketing capabilities (Coviello & Munro, 1995), and overcome resource limitations related to product development (Coviello & Munro, 1997).

Born globals are becoming increasingly important in the international trade. In 2000, OECD reported that SMEs contributed 25-35 percent of the world's manufacturing exports and accounted for a small share of foreign direct investments (OECD, 2000). Born globals are very important for economies of the smaller European countries, which consist in large part of SMEs. Many born globals are technology-based, and their home markets are far too small to provide enough application opportunities for the resource-intensive technologies and technology-based products (Moen, 2002). The governments are well aware of the national importance of born globals and other international new ventures (INVs), and a number of research and support programs have been initiated to investigate the operations of such firms and encourage other SMEs to internationalize their activities (<http://ec.europa.eu/enterprise/sme>; Gabrielsson & Kirpalani, 2004).

Born globals are highly important in generating innovation (Autio, 1994) and contributing to the development of competitive economies (Moen, 2002). The new, often leading technologies and innovative business models developed by born globals have been highlighted in numerous studies (i.e., Christensen, 2005; Knight & Cavusgil, 2004). There is evidence that some of these start-ups have a high potential for significant growth (Madsen & Servais, 1997) and therefore, generating employment and positively contributing to their countries' economies (Moen, 2002; Rennie, 1993).

## 1.1 Research agenda

Below I review some of the aspects that have already been researched in relation to born globals and other international new ventures (INVs).

### 1.1.1 Research on born globals

Born globals have been attracting a lot of academic attention lately due to their widely understood importance and uniqueness. A large number of studies have been conducted first, to conceptualize the phenomenon

and discuss whether these firms follow the processes described by the traditional internationalization theories. The literature is divided on this issue: some authors claim that these theories do not describe the rapid internationalization processes of born globals (Oviatt & McDougall, 1994; Moen & Servais, 2002; Moen, 2002); while others argue that born globals do follow the same steps, but go through them very quickly, skip some of them, or even proceed in a reverse order (Loustarinen & Gabrielsson, 2006; Coviello & Munro, 1997).

A number of studies have been directed at researching the various strategies that born globals use to quickly internationalize, given their small size, young age, lack of experience and resource constraints. For example, Gabrielsson & Kirpalani (2004) have found that born globals use MNCs as system integrators/distributors, networks of customers and partners, and the internet, or combinations of these as channels to access international resources and knowledge, and to lower the risks associated with new market entry. Freeman *et al* (2006) has identified three major constraints to firm internationalization: lack of economies of scale, lack of financial and knowledge resources, and the aversion of risk taking; and explored how born globals overcome them. The authors have found that the firms employ a mix of five strategies: 1) personal network contacts of senior managers; 2) strong relationships with large foreign customers and suppliers; 3) client followership; 4) use of advanced technology; and 5) use of multiple modes of entry, implemented simultaneously. The findings show that the success of born globals is based on the strong international vision of the founders, their desire to be international market leaders, identification of specific international opportunities, and possession of international contacts and sales leads.

Marketing strategies of born globals in the US and Denmark have been the focus of a study by Knight, Madsen and Servais (2004). The authors have found that the key factor in the international competitive advantage of born globals are international marketing orientation, reflected in customer focus and enacted through the strategies of



product quality, marketing competence and product differentiation. Marketing competence is particularly emphasized as being critical to born globals' international competitive advantage. Product quality and product differentiation are two other important factors. A number of other studies have also focused on marketing strategies of born globals: Luostarinen & Gabrielsson (2006), Gabrielsson & Gabrielsson (2003), Gabrielsson (2005), Kocak & Abimbola (2009).

Networks have long been acknowledged as an important aspect of born globals' internationalization. Networking theory, often in combination with other theories, has been applied in studying networking strategies, capabilities and dynamics of born globals in their international strategies. Coviello & Munro (1995) have discovered a strong influence of network contacts on the born globals' internationalization strategies, new market selection and entry choices. The research has shown a heavy reliance of born globals on their network relationships for marketing-related activities. In a later study, Coviello & Munro (1997) empirically integrated the traditional incremental internationalisation model with the network perspective. The study has shown that the internationalization process of software born globals reflects accelerated stage-wise internationalization, which is driven, facilitated and inhibited by a set of formal and informal network relationships. These relationships affect foreign market selection and entry mode, as well as the product development and market diversification activities of the firms.

The finance aspect of born globals' operations has also attracted academic attention. Gabrielsson *et al* (2004) studied finance strategies of born globals in different stages of their development. Their findings suggest that the finance strategy selection and finance management capabilities influence the advancement of SMEs along their globalization process, which results in born international (international SMEs operating on their domestic continent) or born global companies, or in an alternative – an outright failure. Financial strategies and involvement of external management skills have shown to influence

the global management knowledge accumulation and the quality of decisions in firm internationalization.

Several studies have explored personal characteristics of international entrepreneurs and the effect of their personalities on the international development of their firms. Freeman & Cavusgil (2007) have found that the founding entrepreneurs and top managers can greatly influence the organizations as a direct result of their attitudes, through their decisions, values and visions. Zahra (2005) suggests that "...the genesis of INVs' competitive advantages appears to lie in their founders' cognitions that allow them to quickly spot opportunities in international markets and develop new ways to exploit them." (p. 22) Freeman & Cavusgil (2007) highlight an international business mindset as a prerequisite for international expansion. Four entrepreneurial attitudinal / commitment states of entrepreneurs/top managers have been discovered, ranging from responders to strategists in international development of their firms. Karra *et al* (2008) emphasize that the most salient factor in rapid firm internationalization is not necessarily the nature of products or the market, but rather individual characteristics of the entrepreneur. His or her experience, skills and networks enable the firm to develop resources that propel it to becoming a born global. The specific individual capabilities for building a born global are international opportunity identification, institutional bridging, and a preference and a capacity for cross-cultural collaboration.

After the initial wave of research that aimed to conceptualize the phenomenon, a number of authors turned their attention to studying the sources of competitive advantage of born globals. A significant amount of literature with this focus builds on the knowledge-based view and the organizational and dynamic capabilities perspectives.

### 1.1.2 Research on knowledge-based capabilities as the sources of competitive advantage of born globals

The work of Knight & Cavusgil (2004) was probably the first to conceptualize rapid firm internationalization from the knowledge-based and capabilities perspective. The limited financial and human resources propel born globals to develop idiosyncratic organizational processes, rules, structures and skills, which enable them to sustain their international competitiveness in the face of resource scarcity, lack of knowledge, changes in the firm's life cycle, and changes in the external environments. It is argued that the born globals' unique knowledge-based capabilities are the key resources that underlie their competitiveness both in the short and the long term.

Knight & Cavusgil (2004) explored the role of innovative culture and organizational capabilities in the early adoption of internationalization and subsequent international performance of born globals. It is argued that the superior performance of born globals is an outcome of their entrepreneurial and managerial knowledge (ref. Autio *et al*, 2000; Lewin and Massini, 2003). Firms with superior innovation and knowledge-creation processes have more sophisticated, better developed and more advanced knowledge-creation routines and learning processes. Knight's & Cavusgil's (2004) findings suggest that at the organizational level, international entrepreneurial orientation and international marketing orientation are the facilitating conditions that lead born globals to pursue a collection of business strategies, which in turn, lead the firms to maximize their international performance. The strategies that they use to reach rapid internationalization and international performance are global technological competence, unique product development, quality focus, and leveraging of foreign distributor competences.

To continue this line of thinking, Knight and Kim (2009) examined the role of specific organizational competences that engender success of international SMEs. They uncovered a collection of intangible

capabilities, together conceptualized as the *international business competence* (IBC), which is “a multidimensional concept that reflects the extent to which the SME adopts a bundle of international competences to carry out international business activities in foreign markets in an effective way.” (p. 260) IBC emphasizes possession of intangible, cultural orientations, as well as specialized processes: international orientation, international marketing skills, international innovativeness and international market orientation. These organizational capabilities are found to serve as a basis of competitive advantage for international SMEs due to the tacit character and complex and causally ambiguous nature of the IBC. These capabilities influence international performance of SMEs, as expressed in the international market share, international sales growth, international profitability and export intensity.

Born globals are described as being inherently entrepreneurial and innovative organisations that, from their very establishment, develop the entrepreneurial and innovative organizational culture and routines suitable for acting in diverse and changing environments (Dimitratos & Plakoyiannaki, 2003; Autio *et al.*, 2000). Their initial international orientation provides them with a strong competitive advantage over more established organizations in the flexibility and quick responsiveness to international market opportunities (Freeman *et al.*, 2006). The companies that venture abroad late in their development must first unlearn the routines rooted in them for domestic operations before acquiring routines for internationally-oriented operations. Bounded rationality and embedded “hierarchies” of routines inhibit their ability to adopt new organizational strategies, structures and approaches, leading to an emphasis on developing knowledge and routines closely related to their existing ones, which may be sub-optimal for dynamic environmental conditions (Autio *et al.*, 2000). In contrast, born globals from their early days build an organizational culture and structure that facilitates development of specific patterns of knowledge integration, creation and acquisition, which together enable their early internationalization and superior performance in foreign

markets (Autio *et al*, 2000; Knight & Cavusgil, 2004; Knight *et al*, 2004).

Gassmann & Keupp (2007) set out to identify the sources of born globals' competitive advantage that enable their internationalization at all. The authors studied how the respective competitive capabilities are generated, sustained and protected, and how born globals transform their specialized knowledge into business performance, given their lack of tangible resources. Based on case studies in the European biotechnology sector, the authors hypothesized that 1) the extent, to which an SME is able to take a specialized and beneficial position in a value chain; 2) homogeneity of the firm's products and services, 3) the innovatory uniqueness of its products, 4) the firm's scope and extent of IPR protection, 5) its embeddedness in global communities and social networks, and 6) the ability to replace ownership of tangible assets by an access to usage of tangible assets, will positively influence the SME's ability to rapidly internationalize. While the importance of the firm's presence at a specific geographic location will influence this ability negatively.

Taking the capabilities approach a step further, Weerawardena *et al* (2007) developed the dynamic capabilities view of accelerated internationalization, which explicitly acknowledges the role of organizational learning. The role of founders/managers in shaping and developing assets and capabilities of born globals is strongly emphasized. Dynamic capabilities, which involve processes instrumental to knowledge creation, integration and configuration, are argued to be the basis of the firms' competitive advantage (Grant, 1991; Teece *et al*, 1997). It is argued that in order to engage in accelerated internationalization, a firm must learn from multiple sources. Dynamic capabilities are the routines, through which the firm learns. A number of dynamic capabilities that firms must develop for successful internationalization are suggested: a market-focused learning capability, an internally focused learning capability, which combines technological and non-technological information generated within the firm, and a

networking capability. The combination of the three learning capabilities leads to the creation of knowledge intensive and internationally competitive products, which, supported by the firm's marketing capability, enable accelerated firm internationalization.

## 1.2 Research problem

As can be seen, there has been a great amount of highly interesting and important theoretical developments about born globals and the broader group of INVs, coming from different theoretical approaches and studying the firms from various continents. This type of firms has very clearly become accepted as a very important phenomenon. However, a great majority of research so far has focused on the early start-up and rapid internationalisation stage of born globals' development. What about the later years? The question of how these firms uphold a competitive advantage in the long term with their limited resources and a small size, while operating in various countries, remains under-researched. Once the born globals have begun selling their products in many countries, once they have established the in-sourcing and out-sourcing value chains across countries or continents, what will enable these SMEs to survive and be competitive in the long run? They will be competing internationally against companies of various sizes. Many of them are much better established, have a significantly bigger availability of human, financial and other resources, much more experience in international operations, a long history of technological developments, and in many cases, numerous international bases with local employees to obtain the local knowledge from. While born globals may remain SMEs for a very long time, and it may take many years before their resource availability can in any way match that of an MNE business unit.

Furthermore, markets are highly volatile, especially in the current time of an ongoing economic recession, a possible crisis of capitalism and a redistribution of the world's economic power. New players are coming

from everywhere, including the developing countries where the labour is incomparably less expensive than in the developed world, where most studied born globals come from. The organisational factors and processes that enable a long-term competitive advantage of born globals remain largely a black box, apart from a couple of studies that are beginning to explore this issue (e.g., Mort & Weerawardena, 2006).

Meanwhile, knowledge about the sources of long-term competitive advantage would be of great social, economic and academic importance, as born globals are essential in generating innovation and transferring academic developments into practice and commercializing them (Harmon *et al*, 1997; Autio, 1994). Born globals are important to building competitive economies (Hawkins, 1993). Some of these firms have a significant growth potential (Jolly *et al*, 1992; Madsen & Servais, 1997), and thus have the potential to generate a significant amount of employment places. It is in every country's interest to promote independent growth of start-up ventures, because if they get purchased by a multinational enterprise (MNE) in their early years, the start-ups will no longer have control over their destiny and strategy. The technology, which might have had a great application potential, might end up being used for narrow needs of the parent company and never be developed to its entire potential.

To gain the knowledge about the organisational factors, processes and other characteristics of born globals that can provide them with a basis for a long-term competitive advantage, one has to take an intensive longitudinal methodological perspective. Such approach is necessary in order to trace the specific organisational factors, processes, and specific ways, in which they affect the firms' operations in the long run. This is the area where I see an important potential contribution.

I have chosen to focus specifically on technology-based born globals, as, first of all, many studies show that the majority of born globals are knowledge-intensive organizations (Gabrielsson & Kirpalani, 2004; Bell *et al*, 2003). Secondly, it is particularly technology-based born

globals that are important to both national and international innovation systems, where these firms can serve as the vehicles for developing basic scientific research into usable products needed and demanded by customers and societies. This makes these firms important contributors to their countries' export activities and international competitiveness, potential engines for economic growth and employment opportunities. This brings me to the purpose of this dissertation.

### 1.3 Purpose

The purpose of this dissertation is to describe and explain the organisational factors and processes that serve as the sources of competitive advantage of technology-based born globals in the long term.

### 1.4 Theoretical focus

As an overarching theory, the knowledge-based view of the firm (KBV) and the related organizational capability perspective have been selected. This choice has been arrived at in an iterative manner, based on a continuous interaction with both theory and empirical work (Langley, 1999; Pettigrew, 1990). Results of the extensive review of the international entrepreneurship literature have been continuously compared to the empirical data collected over three years of participant observations conducted by me. One source of inspiration has been the influential school of thought that investigates sources of competitive advantage of born globals and uses the KBV and the organisational capability approach as the basis, as discussed above. The second source has been the key insight that integration of *individual*, specialized and largely tacit knowledge is what makes existence of born globals (and other knowledge-intensive SMEs) possible and their operations competitive, due to the generally low endowments of other resources. This insight found strong support in the empirical observations, and



this was the key reason for choosing the KBV and the organizational capability perspective as the overarching theory in this dissertation. Organisational capabilities are conceptualised as the *mechanisms for integrating the knowledge and skills of individuals* into smoothly functioning organisational processes (Grant, 1996; Bingham *et al*, 2007).

Other theoretical frameworks (networking theory, transaction cost theory) seem to only focus on some aspects of operations of INVs, while missing the very core of the organization – *its people and their knowledge*, which enable scientific research, development of products, their manufacturing, building marketing channels, and all other operations of a commercial venture. The value of each individual and his/her knowledge to a firm becomes very clear when one studies the history of a technology-based firm, which was founded based on the knowledge and initiative of one person. Ten years later, it is still a small venture with ca. 30 employees, but is a successful international company with a recognized brand, producing some of the internationally leading products in its field. A number of prominent international entrepreneurship researchers (Knight & Cavusgil, 2004; Knight & Kim, 2009; Mort & Weerawardena, 2004; Weerawardena *et al*, 2007; Rialp *et al*, 2005; Gassmann & Keupp, 2007; etc.) take the same theoretical stance and choose the KBV the organisational capability perspective as the theoretical approach to study these ventures.

The knowledge-base view has its roots in evolutionary economics (Nelson & Winter, 1982) and internal capabilities of the firm (Grant, 1996). The evolutionary economics view implies that the superior abilities of certain firms to sustain innovation and create new knowledge lead to the development of organizational capabilities. Knowledge is the most important organisational resource, and the integration of individual specialized knowledge is the essence of organizational capabilities (Grant, 1996; Nelson & Winter, 1982). Knowledge refers to the capacity of firms to apprehend and use

relationships among informational factors to achieve intended ends (Autio *et al*, 2000). The most important knowledge resources are unique, inimitable, and immobile, reflecting the idiosyncratic history of each individual firm (Grant, 1991). This idiosyncratic knowledge base gives rise to unique organizational capabilities (Nelson & Winter, 1982). Organizational capabilities reflect the ability of a firm to perform repeatedly or ‘replicate’ productive tasks that relate to the firm’s capacity to create value through effecting the transformation of inputs into outputs (Nelson & Winter, 1982; Teece & Pisano, 1994). Organizational capabilities are argued to be the main source of a firm’s performance and competitive advantage (Grant, 1991).

The first three years of the dissertation project were carried out in a learning partnership between a Danish technology born global Bang & Olufsen ICEpower a/s and Lund University’s Institute of Economic Research. As a part of the arrangement, I was undergoing a part-time traineeship in marketing communications at the firm and spent 20-70 percent of my time at the firm’s facilities. Due to this unique setup, I was able to observe and closely study the firm’s operations from the inside, and apply a longitudinal process methodology to identify and explore specific organizational capabilities that underlie the competitive advantage of the technology born global over time, the development and effect of these capabilities. The longitudinal process perspective is an important contribution of this dissertation.

Having chosen the overarching theory and having conducted an extensive review of the literature on born globals and new technology-based ventures (NTBFs), I have arrived at the four focus capabilities, which are important building blocks of long-term competitive advantage of technology born globals. The actual process and argumentation as for how each of the focus capabilities has been arrived at will be discussed in Chapter 3 on Methodology and Methods, as it has been a result of the iterative methodological approach. A short overview of the reasoning is presented here.

R&D capabilities are the very substance of the business of technology-based born globals. These firms are based on unique technologies, and their competitive advantage and the basis for existence lies in being able to develop new internationally competitive products (Knight & Cavusgil, 2004; Gassmann & Keupp, 2007; Knight & Kim, 2009). The born globals are, however, restricted by the serious resource limitations and other challenges typical for SMEs: the lack of internal expertise and resources to turn their technologies into finished products, lack of specialized pricy equipment, lack of experience of putting new products into production, challenges in finding profitable application of technologies, difficulties in entering the desired markets, the liability of newness, and many others. Therefore, analyzing and discussing the key aspects of R&D-related capabilities are extremely important for understanding the sources of competitive advantage of technology born globals in the long term. However, the published literature on born globals is only beginning to address these issues (Gassmann & Keupp, 2007a), and the R&D literature does not contain studies of born globals with their unique specificity and challenges.

The literature discusses networking and alliance building as one of the key strategies and capabilities that enable rapid SME internationalization (Coviello & Munro, 1995; 1997). Technology-based born globals are particularly reliant on alliances with MNEs, since the born globals often lack the resources to develop their technologies into finished products, manufacture them up to the international standards, and distribute them in the necessary amounts and to the necessary parties (Mort & Weerawardena, 2006). Born globals also need established market partners to enter their target markets, which is especially critical in the complex technology B2B markets, where many MNE manufacturers have lists of “approved” suppliers, and it is very difficult for a young and small newcomer to get through to them. However, carrying out a productive alliance with an MNE and bringing it to the desired result is not a trivial endeavour: MNEs and born globals are characterized by large differences in power,

dependence and resource availability, as well as organizational complexity and hierarchy. In spite of the vast amount of literature on alliance management, it does not address alliance management among such different and unequal partners. Neither does the international entrepreneurship literature explore this issue. Therefore, I concluded that it was important to conduct a detailed study of the alliance capability of technology born globals as an essential contributor to their long-term competitive advantage.

Branding activities might not be the first thing that comes to mind when considering sources of competitiveness of a technology-based SME. However, B2B technology markets, where many of born globals operate, are driven by high cost competition. In such conditions, it is difficult for a small firm to become a significant player: the bigger players will always have more resources and the scale and scope efficiencies. This is why it is important for a born global to start building its brand from the very first days and persistently claim what makes their products and technologies unique. Over time, these efforts, added by the reputation earned by the products, technologies and business relations, pay off and the firm can become a recognized player. The brand begins to serve as the quality hallmark for the firm and its products. This line of thinking was supported by a unique brand building strategy conducted by the case venture, and prompted me to investigate in detail the branding capability of technology born globals as another contributor to their competitive advantage in the long term.

Finally, the literature on organizational capabilities contains a growing section on dynamic capabilities – the meta-capabilities that are argued to be “the holy grail” of sustained competitive performance of any venture. The dynamic capabilities are said to be the organizational structures, skills and processes that allow for incorporating environmental, as well as internal changes into the firm’s operations, updating its operational capabilities and thus keeping the firm competitive in the long term. I was looking for the presence of dynamic capabilities in the case organization and, helped by the macroeconomic

events, have found evidence of them in the form of managerial action. The study coincided with the financial crisis of 2008 and the subsequent economic recession; which in turn, were accompanied by an ownership change and an internal restructuring in the case organization. I was able to observe the development and enactment of the managerial capability in the firm and have conducted a detailed study of it. The managerial capability is viewed in this study as a meta-level capability which, if effective, can serve as a basis of a long-term competitive advantage of a technology born global.

To sum up, in this dissertation, I explore and analyze the following organizational capabilities of technology born globals, which have been identified to be important contributors to the competitive advantage of such ventures in the long term:

- R&D-related capabilities,
- Alliance capability,
- Branding capability,
- Managerial capability.

This dissertation is composed as a compendium of four articles, where in each one, each of the four capabilities is explored in detail. A summary of the articles' purposes, publications and conference presentations, and my personal contribution is presented in Table 1.1. For researching each capability, besides the international entrepreneurship and organizational capabilities literature, I built on the literature on each specific organizational function in focus, i.e. branding, alliance management and networking, R&D management, knowledge management and managerial capability. The dissertation finishes with Conclusions, where the findings are discussed from the organisational learning perspective, and the practical recommendations from the study are deliberated.

With this research project, I expect to contribute to the international entrepreneurship literature, as well as to the specific theoretical fields discussed above in relation to technology-based born globals and other technology-based SMEs. The theoretical contributions will be discussed in detail in the Theoretical Framework and later in the Conclusions.

Table 1.1 The compendium of articles composing the dissertation

Article no.	Name	Authors	Research purpose(s)	Presentation / publication / submission	My contribution
1	“R&D-related Capabilities of Technology Born Globals”	Liliya Altshuler	To investigate the R&D-related capabilities of technology born globals and explain the aspects that are critical to sustaining the firms’ competitive advantage over time.	Presented at the CIMaR (Consortium for International Marketing Research) 2011 conference on April 6-9, 2011, in Atlanta, Georgia, USA.	My individual work
2	“The Alliance Capability of Technology-Based Born Globals”	Liliya Altshuler, Ulf Elg	To explore the alliance capability of born globals in a technology context. Alliance capability is regarded as a set of organizational skills necessary from the decision to search for a partner for a technology collaboration, through initiation and management of the alliance, until its objectives are achieved, or otherwise.	Has been re-submitted to the <i>International Business Review</i> after a “revise and re-submit” response (the latest version is included). Presented at the 2010 Babson College Entrepreneurship Research Conference (BCERC), Lausanne, Switzerland, on June 9-12, 2010. Abstract included into the <i>Frontiers of Entrepreneurship Research 2010</i> . Published in <i>Lund University’s Working Paper Series</i> in September 2010.	I have conducted the empirical study. Together with Ulf Elg, we developed the theoretical framework and the analysis.

3	<p><b>“Branding Capability of Technology Born Globals”</b></p>	<p>Liliya Altshuler, Veronika V. Tarnovskaya</p>	<p>1) To define the specific activities that born globals undertake when building a brand. 2) To define the components comprising brand value to customers in technology B2B markets. 3) To conceptualize a particular branding capability of technology born globals, based on the findings from the first two research purposes.</p>	<p>Published in the <i>Journal of Brand Management</i>, Vol. 18, No. 3, pp. 212-227. Published in <i>Lund University’s Working Paper Series</i> in Dec. 2009. Presented at the 5th International Colloquium of the Academy of Marketing’s Brand, Corporate Identity and Reputation Special Interest Group, 1-3 Sept. 2009, Cambridge, UK.</p>	<p>I have conducted the empirical study. Together with Veronika Tarnovskaya, we developed the theoretical framework. The analysis and conclusions have been done mostly by me, with support and critical input from Veronika Tarnovskaya. We both worked on the comments from reviewers.</p>
4	<p><b>“Managerial Capability of Technology Born Globals”</b></p>	<p>Liliya Altshuler</p>	<p>Through empirically exploring a technology born global’s history, the challenges it faced throughout its development and how they were solved, identify and discuss the aspects of an effective managerial capability of technology born globals.</p>	<p>Is submitted to the <i>Journal of International Entrepreneurship</i>.</p>	<p>My individual work</p>



## 1.5 Brief introduction of the case company

Bang & Olufsen ICEpower a/s is a Danish high-technology born global. It was founded in 1999 in a joint venture between the inventor of the firm's core technologies, Dr. Karsten Nielsen, and Bang & Olufsen (B&O). The firm's subsequent development has been rather independent from B&O. ICEpower is the developer of Class D (switching) audio amplification technologies and products, which provide great advantages in power efficiency over the more traditional analogue technologies. ICEpower was one of the firms that pioneered the shift of the international audio industry from analogue to switching technologies in the late 1990s-early 2000s, which has enabled development of much more miniature audio products for various applications without compromising audio quality. ICEpower today employs ca. 35 persons. Its main office is located in Kgs. Lyngby in the Greater Copenhagen area, and it operates regional offices in Chicago and Tokyo. ICEpower develops products for consumer and professional audio and video applications, mobile audio and automotive audio, and is highly respected in its markets. (A more detailed description of the case organisation is presented in chapter 3 the Methodology and Methods).

## Chapter 2

# Theoretical Framework

In this dissertation, the choice of theory was derived at through the iterative approach (Easton, 2010; Langley, 1999) and was significantly influenced by the empirical work. I have conducted an extensive literature review on born globals, where authors applied various theories to studying this phenomenon; and where eventually, the organizational capability perspective has become one of the dominant approaches (e.g. Knight & Cavusgil, 2004; Knight & Kim, 2009; Rialp *et al*, 2005, and others). In reviewing the literature, I saw that only a very small portion of the international entrepreneurship literature focused on investigating the sources of competitive advantage of born globals in the long term, and saw that with my research setup I could make a contribution in this area. At the same time, in the empirical work, I was observing the critical importance of the specialized knowledge and skills of each individual employee in a born global venture. Thus, the knowledge-based view of the firm and strategy (KBV) and the organisational capabilities perspective seemed to have a significant potential explanatory power.

Therefore, as the overarching theory, I employ the KBV together with the organizational capabilities perspective. The broad literature on born globals and other international new ventures (INVs) as part of the international entrepreneurship field has served as the basis for the discussions. An additional source of insight has been the literature on technology start-ups (NTBFs) and SMEs in general, since these firms, although they do not necessarily aim for rapid internationalization, face many challenges similar to those of technology born globals.

Furthermore, I have involved the relevant substantive theory on managing specific organizational functions, i.e. alliance management, branding, R&D and innovation management, knowledge management and managerial capabilities in researching individual capabilities. In this section, the overarching theory and literature for the dissertation is discussed, and the theory on managing specific functional capabilities will be discussed in the individual articles.

## 2.1 Born globals

### 2.1.1 Definitions

International new ventures (INVs) (of which born globals are a specific type) were first conceptualized as a phenomenon in the early 1990s. The authors that are most widely cited for drawing academic attention to the INV phenomenon are Oviatt & McDougall (1994). They discussed the phenomenon of rapid internationalization observed in young ventures in various countries and developed a typology of such ventures. A more empirically based study that also contributed to the initial conceptualization was that of Australian rapidly internationalizing ventures by Rennie (1993).

The defining characteristic of born globals is that these are new or young ventures, which ‘jump over’ or go quickly through the incremental internationalization stages conceptualized by the traditional internationalization theories – the “Uppsala Internationalization Model (U-M)” (e.g., Johansson & Vahlne, 1977) and the “Innovation-Related Internationalization Model (I-M)” (Bilkey, 1978; Cavusgil, 1980). Born globals, from their very establishment build their strategies, plan their market offerings and commit resources for starting operations in several international markets. The great developments in communication and information technology, transportation services, and the general economic globalization trends have opened the doors for internationalization to the young and small ventures; whereas

previously, it has been the realm reserved only for multinational corporations with vast resources.

The distinguishing feature of INVs from the gradually internationalizing ventures is the 'observable and significant commitment of resources in more than one nation' (Oviatt & McDougall, 1994). The key in discussing the developing of these firms as opposed to those of domestic new ventures (DNVs) is the high speed, with which they internationalize their activities. Following Oviatt's and McDougall's definition of INVs (1994), these firms do not necessarily own foreign assets: they may set up hybrid forms of asset ownership, i.e. alliances with local players, or might not own foreign assets at all, but their strategies and focus markets are international from their very establishment.

A good example to understand the essence of born globals would be the newly formed high-technology ventures from the smaller European countries, i.e. Scandinavian economies, where the high level of education and public support for NTBFs allows for development of leading technologies and formation of highly sophisticated ventures. The home markets are too small to offer a large enough customer base for the technologies and the products, hence, from or even before the firm's establishment, the founding entrepreneurs aim at an internationally located customer base – i.e. the electronics manufacturers located in Japan, Korea and the US; or the automotive manufacturers, located outside of Scandinavia.

Definition of born globals has created a large discussion in the literature (see Table 2.1 for an overview of the definitions). A widely used and accepted definition of Oviatt & McDougall (1994:49) where an INV is '*a business organization that, from inception, seeks to derive significant competitive advantage from the use of resources and the sale of outputs in multiple countries*'. The authors developed a typology of INVs, the types include an export/import start-up, a multinational trader, a

geographically focused start-up, and finally, a global start-up – the type of firms that is most often referred to as ‘born global’.

Of the two other widely cited definition, the first one is of Knight (1997:1; in Moen, 2002): a born global is

a company which, from or near its founding, seeks to derive a substantial portion of its revenue from the sale of its products in international markets.

And a later definition of Knight & Cavusgil (2004:124):

business organizations that, from or near their founding, seek superior international business performance from the application of knowledge-based resources to the sale of outputs in multiple countries.

Born globals are mainly SMEs (Knight & Cavusgil, 2004; Knight *et al*, 2004; Kocak & Abimbola, 2009, and others). In this dissertation, the European Commission’s definition of an SME (01.01.2005) is followed:

The category of micro, small and medium-sized enterprises (SMEs) is made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding 50 million euro, and/or an annual balance sheet total not exceeding 43 million Euro.” (Extract of Article 2 of the Annex of Recommendation 2003/361/EC).

There is, however, a disagreement in the literature as for the number of years for internationalization that defines a born global: Rennie (1993) states two years, Knight & Cavusgil (2004) - three years. Freeman & Cavusgil (2007) summarize that in general, the literature suggests that born globals internationalize within two to six years after their establishment.

Other authors have tried to define the cut-off ratio of revenue coming from foreign operations to the total revenue, which should define a born global. Knight & Cavusgil (2004) stated 25 percent, and Gabrielsson *et al* (2004) and Luostarinen & Gabrielsson (2006) stated

50 percent. However, there is a general agreement that such cut-off ratios do not capture the full phenomenon in specific country settings and therefore, should not be included into a definition (Kuivalainen *et al*, 2007). 25 percent may be a reasonable figure for the US, but born globals from SMOPEC countries are characterized by much higher export rates. For examples, newly established Norwegian firms have the average export rate of 65 percent (Moen, 2002); and Danish exporters - 69 percent (Madsen *et al*, 2000).

A valid point is made by a number of authors (Kuivalainen *et al*, 2007; Gabrielsson *et al*, 2004; Luostarinen & Gabrielsson, 2006) as for the geographical reach of international ventures, which is defining of whether they are truly 'born global' or rather 'born international' (Gabrielsson *et al*, 2004; Luostarinen & Gabrielsson, 2006), 'born regional' (Kuivalainen *et al*, 2007) or 'geographically focused start-ups' (Oviatt & McDougall, 1994). Luostarinen & Gabrielsson (2006:780) define *global* ventures as the firms that

... have usually first started to internationalize their operations and, on top of that, have entered global markets, deriving most of their income (over 50%) *from non-domestic continents*. (Luostarinen & Gabrielsson, 2006:780) (italics added)

They define born *international* ventures as

.. firms for which international business is the largest source of revenue (over 50% of total sales) and whose major foreign markets are located *on their domestic continent*." (p. 780) (italics added)

Kuivalainen *et al* (2007) has a similar discussion of a cut-off export ratio of 25 percent of total sales for 'apparently born global' or 'born international' – firms exporting only to close markets; and the 'genuine born globals' that operate in distant markets and multiple regions and fulfil more or less the definition of a global firm as per Levitt (1983). In line with Oviatt & McDougall (1994), Kuivalainen *et al* (2007) propose a three-dimensional approach to defining a firm's internationalization strategy: the scale (of which export intensity is most

common indicator, i.e. share of turnover from foreign markets out of total turnover), scope (possible indicators are market distance or number of markets) and time (speed of internationalization).

Still, a more strikingly different discussion is offered by the entrepreneurship authors. Di Gregorio *et al* (2008) and Zahra & George (2002) rightfully note that the majority of the previous research on born globals had employed international sales activities as the main defining dimension of a born global / INV. Di Gregorio *et al* (2008) shift the focus from the process and timing of internationalization of sales to the discovery, evaluation and exploitation of international entrepreneurial opportunities. Building on the work of prominent entrepreneurship authors – Schumpeter (1934; 1943), Kirzner (1973), Hayek (1949, 1945), Mises (1949), and Shane (2003), Di Gregorio *et al* (2008) conceptualize international entrepreneurship as a *cross-border nexus of individuals and opportunities*. They argue for redefining the concept of INV from solely new ventures with rapid sales internationalization to also include new ventures that employ cross-border resource combinations, as well as the ventures that employ cross-border combinations of both resources and markets.

In their conceptualization, INVs emerge as a way of exploiting opportunities that arise in the international contexts. Resource combination opportunities refer to the potential to create value through innovative arrangements of internationally based strategic factors. These may involve, among other resources, pooling of international entrepreneurial talent. Cross-border market combinations involve introducing a particular product / service from one country into one or more other countries.

The two very different theoretical approaches from the international business and entrepreneurship literature have led to a split between the two streams of literature on born globals / INVs (Aspelund *et al*, 2007). The difference in definitions is significant, since the international business approach completely leaves out the supply side of international

entrepreneurship – which, in my opinion, should not be done. Developing new technologies, products and services from internationally located strategic factors is not a trivial challenge and requires special valuable competences, just as arranging for international sales of a new product or entering a new market.

Therefore, I choose to use the entrepreneurship conceptualization of a born global as a nexus of cross-border resource combinations. I would, therefore, like to add the cross-border resource combinations to the definition of Knight & Cavusgil (2004). Thereby, building on the definitions of Knight & Cavusgil (2004) and Di Gregorio *et al* (2008), I define a born global as *a business organization that has achieved international operations within a few years after its establishment through the application of knowledge-based resources to the sale of outputs in and the combination of input resources from multiple countries, including those located beyond the firm's domestic continent.*

This definition combines the widely accepted definitions from the international business literature (Oviatt & McDougall, 1994; Gabrielsson, Kirpalani, 2004) and includes important aspects from the international entrepreneurship theory. After all, international entrepreneurial behaviour is one of the defining features of born globals. This definition reflects the 1) international orientation and commitment of resources by the founders from the firm's establishment, 2) emphasis on international operations in and resource combinations from numerous countries, and 3) the knowledge-based nature of the firms' key resources.

Furthermore, I do agree with Kuivalainen *et al* (2007), Gabrielsson *et al* (2004) and Luostarinen & Gabrielsson (2006) as for their distinction between born globals and born internationals. Doing business on one's own continent, often in culturally close countries, requires less sophisticated entrepreneurial and international business skills, than reaching out to other parts of the world and attempting to do business there. Therefore, a born international is defined in this dissertation as a



business organization that has achieved international operations within a few years after its establishment through the application of knowledge-based resources to the sale of outputs in and the combination of input resources from multiple countries on the firm's domestic continent.

In this dissertation, however, the focus is on born global ventures.

As for an operational definition, I use a combined definition that both born globals and born internationals are the firms that have achieved significant international activities on average within six years of their founding (Freeman & Cavusgil, 2007). By significant international activities I mean international activities in more than three countries beyond their home country (Bell *et al*, 2008).

Table 2.1 Various definitions of born globals / INVs found in the literature

*arranged alphabetically by author*

Author, year	Term	Definition
Bell <i>et al</i> (2001:174)	Born-again globals, extension of the born global phenomenon	“Typically, these are well-established firms that have previously focused on their domestic markets, but which suddenly embrace rapid and dedicated internationalisation.” This typically happens following a critical event: change of management, drastic change in firm strategy, management buyout, following an MNC customer, or acquisition by another firm.
Di Gregorio <i>et al</i> , (2008:194)	INV	INVs are seen as arising from the cross-border nexus of individuals and opportunities. Some INVs may result from opportunities to leverage domestically based resources across national borders; others are created to exploit opportunities for novel combinations of international resources. INVs may also simultaneously engage in cross-border combination of resources and international market expansion.
Gabrielsson, Kirpalani (2004:557)	Born global	“For the purpose of this article, it is enough to conclude that born globals from their inception pursue a vision of becoming global and often globalize rapidly without any preceding long term domestic or internationalization period.”

Knight & Cavusgil, (1996:11)	Born global	“small, [usually] technology-oriented companies that operate in international markets from the earliest days of their establishment”
Knight (1997:1; in Moen, 2002)	Born global	“a company which, from or near its founding, seeks to derive a substantial portion of its revenue from the sale of its products in international markets.”
Knight & Cavusgil, (2004:124)	Born global	“business organizations that, from or near their founding, seek superior international business performance from the application of knowledge-based resources to the sale of outputs in multiple countries.”
Knight, Madsen & Servais (2004:649)	Operational definition of a born global	“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.”
Kuivalainen <i>et al</i> (2007)	Apparently born global vs. genuine born global	‘Apparently born global’ or ‘born international’ are the firms exporting only to close markets, with the export ratio of 25 percent (an arbitrary cut-off point). ‘Genuine born globals’ are the firms that operate in distant markets and multiple regions and fulfil more or less the definition of a global firm as per Levitt, 1983.
Luostarinen & Gabrielsson, (2006:780)	Born global vs. born international	“International firms are firms for which international business is the largest source of revenue (over 50% of total sales) and whose major foreign markets are located on their domestic continent.”  “Global companies are companies that have usually first started to internationalize their operations and, on top of that, have entered global markets, deriving most of their income (over 50%) from non-domestic continents.”
McDougall <i>et al</i> , (2003:69)	INV	“... a firm that began receiving revenues from international business activities while not more than 6 years old”.
Oviatt & McDougall (1994:49)	International new venture (INV)	“a business organization that, from inception, seeks to derive significant competitive advantage from the use of resources and the sale of outputs in multiple countries.”
Rennie (1993:45)	Born global	(description) “small to medium-sized companies that successfully compete - virtually from their inception - against large, established players in the global arena. These firms did not slowly build their way into international trade. Contrary to popular wisdom, they were born global.”

## 2.1.2 Specific characteristics

Below is a summary of the specific characteristics of born globals and qualities of their founders and managers that are discussed in the literature:

**A large portion of born globals are technology-based:** a large number of born globals have their strong competitive edge in technology development (Moen, 2002; Jones, 1999), often offering a leading technology on a market. Many born globals spring from technical departments of universities and/or university incubators. These firms are very important in generating innovation and developing competitive economies, which explains the focus of a large number of studies particularly on technology born globals (Rialp *et al.*, 2005). Knight & Cavusgil (1996) even name technology base as a defining characteristic of born globals (see Table 2.1). However, other authors (Oviatt & McDougall, 2004; Luostarinen & Gabrielsson, 2002) state that born globals are found across industries and sectors with different levels of technological intensity.

Born globals have been characterized as knowledge-based or knowledge-intensive organisations (Bell *et al.*, 2003). Technical knowledge is often also required in their sales and marketing activities. The knowledge-based firms have either developed proprietary knowledge or have acquired knowledge, without which they would have not existed. The knowledge-intensive firms, in contrast, use the knowledge to develop new product offerings, improve productivity, logistics or service, or introduce new production methods, but are not inherently knowledge-based. Examples are computer aided design (CAD), computer aided manufacturing (CAM) firms, high-tech fabrics and printing companies. Knowledge base of these firms can be regarded as their core competence and a source of competitive advantage (*ibid.*).

**A large portion of born globals operates in business-to-business markets:** while some studies have shown that born globals are found in

various industries and in both B2B (business-to-business) and B2C (business-to-consumer) environments (Gabrielsson, 2005), other studies indicate that born globals are more often found in B2B than in B2C environments (Knight *et al*, 2004; Moen, 2002). Serving a relatively low number of business customers is more viable for a small firm than serving a wide B2C market, particularly in regard to marketing and distribution expenses.

**Pursue niche market strategies** (Rennie, 1993; Aspelund *et al*, 2007; Shrader *et al*, 2000; Madsen *et al*, 2000; Bell *et al*, 2003). With some exceptions (Crick and Jones, 2000; Bell *et al*, 2004), the literature suggests that resource-limited born globals normally follow a niche market strategy, rather than a commodity market strategy. Resource limitations curb the firms' ability to build global marketing, sales and distribution capabilities. Hence, they normally follow niche strategies where competition is relatively low, while the opportunity for profit is significant. They aim for leadership in the niches. Gassmann & Keupp (2007) have even proposed the extent, to which the firm is able to take a specialised position in international value chains, to be one of the factors that enable an early and rapid internationalisation of SMEs.

**Highly networked:** networking is critical to born globals' success in new markets (Mort & Weerawardena, 2006; Freeman *et al*, 2006; Gabrielsson & Kirpalani, 2004; Bell *et al*, 2003). Being very limited in resources, they often rely on hybrid governance structures and network relations to propel their internationalization. The firms use vertical and horizontal network relations to rapidly gain access to international markets, to the partners' marketing infrastructure and capabilities (Coviello & Munro, 1995), and to overcome resource limitations related to product development (Coviello & Munro, 1997).

**Flexible, lack deeply rooted administrative routines:** the literature (Autio *et al*, 2000; Knight *et al*, 2004; Knight & Cavusgil, 2004) discusses that youth and the lack of embedded organizational routines is a strong advantage of born globals over established firms. In older

firms, embedded structures tend to constrain strategic choice and prevent the firms from renewing their embedded routines when entering new foreign market environments. Born globals, on the other hand, from their early days develop a flexible and entrepreneurial organizational culture and processes appropriate for diverse international operations.

**Characterised by an international entrepreneurial orientation / culture** (Knight & Cavusgil, 2004; Mort & Weerawardena, 2006; Dimitratos & Plakoyiannaki, 2003). Born globals are inherently entrepreneurial and innovative firms. Their organizational culture facilitates the acquisition of knowledge, leading to capabilities that drive organizational competitive advantage. These firms display a specific pattern of knowledge and capabilities that enable early internationalization and successful performance in foreign markets.

Knight & Cavusgil (2004:129) provide a good discussion of the international entrepreneurial qualities of born globals:

International entrepreneurial orientation reflects the firm's overall innovativeness and proactiveness in the pursuit of international markets. It is associated with innovativeness, managerial vision, and proactive competitive posture. (...) A posture that is innovative, visionary, and proactive may be necessary amongst a class of firms that, in the face of relatively limited resources, takes the initiative to pursue new opportunities in complex markets, typically fraught with uncertainty and risk.

**Characterised by an international marketing orientation** (Knight & Cavusgil, 2004; Dimitratos & Plakoyiannaki, 2003). Knight & Cavusgil conceptualize the international marketing orientation as a “managerial mindset that emphasizes the creation of value, via key marketing elements, for foreign customers” (2004:130). The critical role of marketing competence in rapid internationalization and long-term international operations of born globals is stressed throughout the international entrepreneurship literature (Knight *et al.*, 2004;

Gabrielsson & Kirpalani, 2004; Gabrielsson, 2005; Gabrielsson & Gabrielsson, 2003).

**Decisive role of the entrepreneur** (Gabrielsson & Kirpalani, 2004; McDougall *et al*, 1994; Aspelund *et al*, 2007; Shrader *et al*, 2000). The literature highlights strong entrepreneurial drive, international orientation, strong network connections and networking ability, high level of education, previous international business experience, prior new venture / entrepreneurship experience and prior marketing experiences as the characteristics of many founders and managers of born globals. In technology-based firms, technological expertise is also a characteristic of the managers and founders (Zahra *et al*, 2005; Gabrielsson & Kirpalani, 2004). The role of commitment states to international operations of the founding entrepreneur and the management team is discussed as being an important factor that affects the intensity, with which firms pursue internationalization (Freeman & Cavusgil, 2007).

### 2.1.3 The forces behind the appearance and growth in number of born globals

The literature extensively discusses the reasons for appearance of born globals on the international business arena. It is generally agreed that born globals and other types of INVs are a result of the conversion of the numerous change forces in the world's economy and of the technological advances. These forces might not have had such a strong effect individually, but together they reinforce one another. Below, they are reviewed based on the studies of Oviatt & McDougall (1994), Axinn & Mathyssens (2001), Madsen & Servais (1997), Autio (2005), Knight & Cavusgil (2004):

- Emergence of a global economy as a result of:
  - Advances in telecommunications, enabling speedier and more effective communication within and between firms;
  - Advances in human and cargo transportation, facilitating faster and more efficient movement of goods and people

within and across continents;

- Advances in the production processes (i.e. flexible production systems) enabling cost-effective product adaptation.

Not all authors see such a wholesome and homogeneous picture of the globalized world. E.g., Rugman (2001; in Axinn and Mathyssens, 2001) asserts that regional and intra-triad business is more widespread than truly global business. However, given the dominance of the triad countries and the sales revenues derived in those countries, Axinn and Mathyssens (2001) argue that most multinational companies equalize triad presence with global presence.

- Emergence of a service economy: services compose a large share of gross domestic product in the developed nations and the world trade.
- ‘New economy’: changes in economic transactions propelled by the spread of the internet and e-business.
- Deregulation in Europe, which has provoked expansion of previously nationally bound utilities and government agencies into neighbouring countries during the last decades.
- Opening up and rapid growth of the developing economies. Entry of companies from these countries into the international business.
- Ready availability of information about markets and suppliers located worldwide.
- Emergence of high technology and of the connected knowledge/network economy. Knowledge intensity leads to creation of complex knowledge networks among global suppliers, customers, universities and knowledge workers.
- Increasing importance of niche markets, which enable small firms to create unique technologies for specific applications and compete in a selected niche across countries.

- Inability of small home markets to support high R&D, finance, marketing and distribution needs of a typical niche-focused technology entrepreneur.
- An increasing number of educational courses in international business.
- An increasing number of management personnel with international experience, knowledge and contacts.
- Incubators for start-up firms, which educate entrepreneurs in international business.

With more options available to start-ups today than, say, thirty years ago, many entrepreneurs do not even consider their home markets as a starting base. Their plans are international and far-reaching. This particularly concerns the technology-based start-ups, many of which are born in the countries with high levels of technical education, i.e. Western Europe, Japan, Australia, Israel and the US. Technology and product development are extremely resource demanding, and some home markets can offer only limited application possibilities. Hence, the entrepreneurs automatically look beyond, to other clusters of relevant technological developments, promote themselves at international trade fairs, and make international contacts and agreements. The technology entrepreneurs are helped by the widely available opportunities for education in entrepreneurship and international business in their home countries.

Latest technological advances allow for efficient and convenient communication and collaboration on distance. Meetings can be held using the advanced internet-based software, where people on different continents see the same picture on their screens. Internet-based solutions allow for fast sharing of information. Therefore, for a person with quality education and experience in international business, running a company internationally, without having to establish offices in each country, is a viable and a highly appreciated option, considering limited resources of a newly established venture.



## 2.1.4 How are born globals different from other types of SMEs?

So how precisely does the speed of internationalization make born globals and other INVs different from the domestic new ventures (DNVs)? How does it affect the firms' strategies, operations, the challenges they face, and which types of firms are likely to become born globals?

The development strategies of born globals are rather different from those of the domestically oriented ventures. In a large-scale study of British SMEs by Bell et al (2003), the *knowledge-intensive* or *knowledge-based firms* fell into the 'born global' category due to their speed and reach of internationalization. Both of these types can be defined as having a high added value of scientific knowledge embedded in both products and processes. Often this knowledge is also required in sales and marketing functions (Coviello, 1994; in Bell et al, 2003). The born globals in the study had a very structured and planned approach to internationalization, implemented from the inception or shortly thereafter in many of them. In contrast, the 'traditional' firms aimed to become established in the home market first, and adopted a much more *ad hoc* and reactive approach to internationalization. It was happening in an incremental manner and over longer periods. The authors, however, have also found a type of firms that had been 'traditional', but after a critical incident, i.e. a change of ownership or management, began pursuing a rapid internationalization strategy – these firms have been termed 'born-again' globals (*ibid.*).

Bell et al (2003) found significant differences in the motivation, objectives, expansion patterns, pace of internationalization, methods of distribution, entry modes, international strategies and financing methods among the traditional, born global and born-again global ventures. The findings are summarized in Table 2.2. It is apparent that the born globals have a planned and strategic approach to internationalization, where the home market (even though UK is a

large European market) is skipped altogether, or where the expansion at home and abroad happens simultaneously. Born globals use the networked approach and alliances to enter a number of international markets simultaneously. Their product development is aimed for the international markets or a specific niche across countries. Meanwhile, the traditional firms only conduct internationalization when they are pulled into it by customers or unsolicited orders. The management is reluctant to take proactive internationalization strategies, and if the firm does expand abroad, it is to psychologically or geographically close markets.

An interesting finding in the study is that the knowledge-intensive and the knowledge-based firms fell into the born global category, while the traditional firms were characterized mainly by activities in low-tech and 'less sophisticated' markets. This suggests that high technology is an important factor in the internationalization strategies of organizations – probably due to the fact that one home market is not enough for knowledge intense products or solutions, and technology easily transgresses borders, as the need for technology is high around the world.

A study of Madsen *et al* (2000) of the differences between born globals and other types of Danish exporters showed very similar results to those of Bell *et al* (2003). Born globals were found to have a unique profile among other groups of exporters in that they do not focus on a specific geographical region. Rather, they target a narrow customer group, which may be located in different places on the planet. Born globals seem to persistently choose foreign distributors as their main distribution channel, instead of relying on direct sales to industrial customers and users, as the traditional exporters seem to do. In their collaboration with the foreign partners (agents, distributors, suppliers), born globals seem to rely on active participation of the partners in planning and execution of the marketing and sales activities much more than other types of exporters do.

Table 2.2 Differences in the internationalisation behaviour of British traditional, born global and born-again global SMEs

(Bell *et al.*, 2003:346-7)

	<b>‘Traditional’</b>	<b>‘Born global’ firms</b>	<b>‘Born-again’ global firms</b>
Motivation	<p>Reactive</p> <p>Adverse home market</p> <p>Unsolicited/ enquiries orders</p> <p>‘Reluctant’ management</p> <p>Cost of new production</p> <p>Processes force export initiation</p>	<p>Proactive</p> <p>Global ‘niche’ markets</p> <p>‘Committed’ management</p> <p>International from inception</p> <p>Active search</p>	<p>Reactive</p> <p>Response to a ‘critical’ incident (MBO, take-over, acquisition, etc.)</p>
Objectives	<p>Firm survival / growth</p> <p>Increasing sales volume</p> <p>Gaining market share</p> <p>Extending product life-cycle</p>	<p>Competitive advantage</p> <p>‘First-mover’ advantage</p> <p>‘Locking-in’ customers</p> <p>Rapid penetration of global ‘niches’ or segments</p> <p>Protecting and exploiting proprietary knowledge</p>	<p>Exploit new networks and resources gained from critical incident</p>
Expansion patterns	<p>Incremental</p> <p>Domestic expansion first</p> <p>Focus on ‘psychic’ markets</p> <p>‘Low-tech’/less sophisticated markets targeted</p> <p>Limited evidence of networks</p>	<p>Concurrent</p> <p>Near-simultaneous domestic and export expansions (exporting may precede domestic market activity)</p> <p>Focus on ‘lead’ markets</p> <p>Some evidence of client ‘followership’</p> <p>Strong evidence of networks</p>	<p>‘Epoch’ of domestic market orientation, followed by rapid internationalisation</p> <p>Focus on ‘parent’ company’s networks and overseas markets</p> <p>Strong evidence of client ‘followership’</p>

Pace	Gradual Slow internationalisation (small number of markets) Single market at a time Adaptation of existing offering	Rapid Speedy internationalisation (large number of markets) Many markets at once Global product development	Late/rapid No international focus then rapid internationalisation Several markets at once Adaptation/NPD
Methods of distribution/entry modes	Conventional Use of agents/distributors or wholesalers Direct to customers	Flexible and networks Use of agents or distributors Also evidence of integration with client's channels, use of licensing, joint ventures, overseas production, etc.	Networks Existing channel/s of new 'parent', partner/s or client/s
International strategies	Ad-hoc and opportunistic Evidence of continued reactive behaviour to new opportunities Atomistic expansion, unrelated new customers/markets	Structured Evidence of planned approach to international expansion Expansion of global networks	Reactive in response to 'critical' incident but more structured thereafter Expansion of newly acquired networks
Financing	'Boot-strap' into new markets	Self-financed via rapid growth Venture capital Initial public offerings (IPO)	Capital injection by 'parent' Refinancing after MBO

Finally, a study of McDougall *et al* (2003) has shown significant differences between the experience of the entrepreneurial team, strategy and industry factors between INVs and DNVs. INVs competed in the more globally integrated industries and used significantly more aggressive strategies than did DNVs (the aggressiveness was indicated by the order of entry into an industry, market share objectives and growth objectives). It was found that INVs chose to compete through differentiation strategies, as opposed to low cost strategies. The hypothesis of the INVs' emphasis on product innovation, quality, service and marketing as strategic weapons were supported. INV entrepreneurs believe that it is important to have an innovation or unusually high quality in their product/service offerings, to promote their firms with strong marketing, and to provide a relatively high level of service to customers. It was also found that INVs operated in a higher number of distribution channels than did DNVs. This could be due to the differences among the countries of operations.

The findings of McDougall *et al* (2003) strongly support the view of the importance of entrepreneurial team experience as a factor in distinguishing INVs from DNVs. The study has shown that INV entrepreneurial teams had higher levels of industry experience than DNV teams. Because small firm normally do not have the resources to hire industry specialists, the founder's / entrepreneurial team's industry knowledge becomes critical. The study has also shown that the average amount of prior international work experiences of the entrepreneurial team members was higher in INVs than in DNVs (the study, however, did not allow for inference of causation).

Considering the above characteristics, born globals are very interesting to study, as they reach for different objectives and face rather different challenges from their domestic or even regional counterparts:

- They face international competition of players of different sizes and countries of origin. Size matters due to the established company and brand names and the scope and scale efficiencies,

which may lead to price advantages. Larger companies also have a higher availability of human and financial resources, and possibly manufacturing and distribution facilities. Their country of origin matters due to the different costs and availability of resources, including labour, in different countries.

- Considering the above challenges, if a born global succeeds in establishing itself as a viable market player, it is often due to the fact that it offers a unique technology, products and/or services, which are internationally competitive. The long-term objective, however, is to be able to *sustain* this technological leadership against these various competitors with different resource endowments, considering the born global's own resource limitations.
- These resource limitations may prevent born globals from being able to complete product development on their own, in spite of them owning the basic technology. Using their entrepreneurial orientation and the networking capabilities, the firms try to overcome these limitations by entering into alliances with larger players for development, sometimes added by manufacturing and distribution of products, or by developing customized products for industrial customers.
- Born globals aim for distant markets, which they might not have enough knowledge about and an entry point into. Resource limitations do not allow the firms to invest directly into the countries of interest. Hence, born globals come up with other sophisticated strategies to overcome these challenges and enter markets using other, 'hybrid' arrangements – agreements with local distributors, JVs, customer followership, or other forms.
- When entering into partnerships with the larger players, born globals are likely to face large differences in size, market power, resource availability and business cultures with the partner organisations.

- In the initial stage, a born global is simply an unknown SME that tries to sell its products to the larger industrial customers or the wider consumer audience. The liability of newness takes years to overcome. Many MNEs have lists of “approved” suppliers, which meet their specific standards and whom they prefer to purchase from. One of the challenges of the born globals therefore is to build an internationally recognizable name or brand for themselves, while normally being restricted by a very low (if any) marketing communications budget.

These challenges are not trivial, and it is not surprising that the firms that are able to overcome them and become internationally competitive have attracted so much academic attention. These challenges strongly affect development of the organizational capabilities, which enable born globals’ competitiveness on the international arena. These challenges/ characteristics will be on the background of the discussion throughout this dissertation.

## 2.2 Choice of theory

A number of theoretical approaches have been taken in the extant literature to explain the phenomenon of born globals and the broader group of INVs. The first many years after the seminal articles of Renny (1993) and Oviatt & McDougall (1994) were spent on conceptualizing the phenomenon and exploring its various characteristics. A number of authors have discussed whether the rapid internationalization path of born globals and other INVs follows the traditional internationalization theories - the “Uppsala Internationalization Model (U-M)” (e.g., Johansson & Vahlne, 1977) and the “Innovation-Related Internationalization Model (I-M)” (Bilkey, 1978; Cavusgil, 1980), and have made proposals as for adjusting or building new theories of internationalization (Andersen, 1993; Oviatt & McDougall, 1994; Axinn & Matthyssens, 2001; Madsen & Servais, 1997).

A great number of academic studies have focused on the strategies and processes of rapid internationalization by new ventures and the factors that make such rapid internationalization possible. Among the theories applied in such studies, the networking theory, entrepreneurship theory and the RBV have been widely used. Table 2.3 summarizes some of the great amount of studies of such aspects of INV operations to demonstrate the variety of the theoretical approaches used.

Coviello & Munro (1995; 1997), Gabrielsson & Kirpalani (2004), Freeman *et al* (2006), Zhou *et al* (2007) and other authors have studied utilization of network relationships by born globals as a key mechanisms for overcoming their resource paucity, lack of product and country knowledge, and the liability of newness in order to rapidly enter new product and geographical markets.

Zahra *et al* (2005), Di Gregorio *et al* (2008), Andersson (2000), Acedo and Florin (2006), Dimitratos & Plakoyiannaki (2003) have focused on the traditional themes of entrepreneurship theory in relation to born globals: recognition, creation and seizing of opportunities in the international context. Zahra *et al* (2005) and Acedo & Florin (2006) have proposed a cognitive approach to international entrepreneurship research with the focus on examining how entrepreneurs recognize and exploit opportunities in the international markets in order to understand the entrepreneurs' motivations to internationalize and their mental models. Dimitratos & Plakoyiannaki (2003) have discussed the foundations of the international entrepreneurial culture of organisations.

Finally, a number of authors have studied the role of different resources in rapid firm internationalization from the RBV perspective (Rialp & Rialp, 2007; Hermel & Khayat, 2011). The role of knowledge and organizational learning in rapid firm internationalization have also been highlighted and explored (Weerawardena *et al*, 2007; Spicer & Sadler-Smith, 2006; Nordman & Melén, 2008).



While having helped us to learn more about born globals and other INVs and having developed very valuable insights and theoretical frameworks, these studies have focused on the early and rapid internationalization stage of born globals. Objective of the current study, however, is to focus on investigating the capabilities that enable reaching a long-term competitive advantage of born globals *past their initial establishment and internationalizations stage* (although their further internationalization may be ongoing). The questions that I am posing in this research is not “How do born globals reach international markets quickly?” but “How can technology-based born globals achieve competitive advantage in the long term?”

Table 2.3. Studies of rapid new firm internationalization from different theoretical perspectives

BG = born global  
 Entr. = entrepreneurial  
 IE = international entrepreneurship  
 INV = international new venture  
 Int. = internationalization  
 Manuf. = manufacturing  
 Org. = organisations

Study	Purpose	Method	Industry, country
<b>The role of networks in rapid firm internationalization</b>			
Coviello & Munro, 1995	To examine the impact of network relationships on: (1) international market development, (2) marketing-related activities within international markets.	1 <sup>st</sup> : 4 in-depth case studies of Int. process. 2 <sup>nd</sup> : Collected a database of firms in the same industry (younger and at an earlier stage of Int.) through a structured mail survey.	Entr. firms in New Zealand's software industry
Coviello & Munro, 1997	To further the understanding of how network relationships impact Int. patterns and processes. More specifically: to understand how network relationships influence the small firm's approach to Int., particularly in terms of foreign market and entry mode selection.	Multiple case study	Entr. firms in New Zealand's software industry
Gabrielsson & Kirpalani, 2004	To indicate viable channel alternatives for BGs to reach new international business space rapidly, given their resource constraints.	A theoretical article, followed by 6 case examples to verify theoretical suggestions.	The case firms from Israel: 2 software & 1 security system developers; Finland: 3 software developers.

Freeman <i>et al.</i> , 2006	Explored how top managers in BGs use networks to develop partnerships and alliances to overcome three main constraints to internationalization: lack of economies of scale, lack of financial and knowledge resources, and aversion to risk taking. Explored how networks are used and relationships are modified over time to meet the changing needs of the partners.	3 in-depth case studies of high-tech BGs	Australia. 1 firm from each of the following industries: food packaging and storage; digital and radio communication; retail outlet design.
Zhou <i>et al.</i> , 2007	Offer a social network explanation for the purported relationship between Int. and firm performance in the context of BGs and SMEs. Argue that home-based social networks play a mediating role in the relationship between inward and outward internationalization and firm performance.	Interview-based questionnaire surveys with top managers of 129 SMEs	China
<b>Recognition, creation and seizing of opportunities in the international context</b>			
Zahra <i>et al.</i> , 2005	Propose that a significant shift can occur in IE research by applying a cognitive perspective and examining how entrepreneurs recognize and exploit opportunities in international markets. The article highlights the benefits to be gained from and the challenges associated with using a cognitive approach to IE research.	Theoretical	
Di Gregorio <i>et al.</i> , 2008	To initiate the process of applying insights from entrepreneurship research to explain the existence of INVs and their consequences for economic development, shifting the focus from the process and timing of sales Int. to discovery, evaluation and exploitation of international Entr. opportunities. Emergence of INVs is explained by geographic dispersion of the key elements in Entr. process: individuals, the experience and other resources that individuals control, and opportunities for new international combinations of resources and/or markets.	Theoretical, followed by an illustrative example	The exemplary SME: water treatment industry, Czech Republic

Andersson, 2000	To present a perspective that includes entrepreneurs in the analysis of firm Int. in order to increase the understanding of some parts of the complex phenomena of firms' international behaviour.	3 longitudinal case studies	Swedish rubber product industry
Acedo & Florin, 2006	Develop a model integrating the individual and firm levels of analysis, and thus bring together the literature on entrepreneurship and international business into a more complex model. Seek to contribute to the understanding of why some leaders of SMEs identify and pursue international opportunities while others do not.	Interview-based questionnaire surveys with top managers/owners of 222 SMEs	Spain. Industries: bread and bakery (38); furniture (59); oil and fat (17); textile (33); plastic products (25); fruit & vegetables (37); jewels (13)
<b>Role of different resources in rapid firm internationalization from the RBV perspective</b>			
Hermel & Khayat, 2011	To identify and analyze resources and capabilities that distinguish between traditional, slow BGs and rapid BG micro-firms.	Three case studies	French micro-firms, cosmetics and pharmaceutical industry
Rialp & Rialp, 2007	To investigate a firm's export adoption and performance through the RBV lens. In particular, to analyse the relevance of different resources, mainly intangible ones, in the development of specific capabilities to conduct earlier export activities. Authors analyze the possible relationship between firm-specific intangible assets and the fact of being, or not, a successful BG company in the Spanish industrial setting.	Survey of 1,102 exporters	Spain
<b>The role of knowledge and organizational learning in rapid firm internationalization</b>			
Weerawardena <i>et al</i> , 2007	Draw on the dynamic capabilities view of competitive strategy and the organizational learning literature to derive a novel conceptualization of accelerated Int. in the BG firm.	Theoretical	

Spicer & Sadler-Smith, 2006	1) To describe the development and validation of a measure to assess organizational learning orientation within small firms. 2) The article considers the relationship between a firm's organizational learning orientation and its performance.	Survey of 4 separate samples: 3 samples of 82, 92 & 91 owner-managers in manuf. firms respectively; 1 sample of 20 middle managers in large public sector org.	UK
Dimitratos, Plakoyiannaki, 2003	Provides a conceptual framework for examining IE by investigating the general context, in which it is embedded, namely, organisational culture. Conceptualize an international Entr. culture and explore its dimensions to provide the aspects of an encompassing framework for the IE construct by employing concepts from organization theory.	Three-stage content analysis of the literature	
Nordman & Melén, 2008	To explore how the levels of international and technological knowledge of founders and managers at BGs are related to the firms' discovery and exploitation of foreign market opportunities.	8 qualitative case studies	Swedish biotech BGs

Many of the born globals will remain SMEs long after their establishment, and the question remains, which organizational factors and strategies would enable their competitive advantage in the long term, with limited resources, across countries, with the changing market, social and macroeconomic conditions, and the internal organizational evolution?

In targeting this research question, it must be remembered that born globals are founded on some type of unique knowledge – a unique technology, service or a business model possessed by their founding entrepreneur(s). It is the *substance* of the firm's market offering that makes its existence possible, and this substance consists of the unique knowledge of the firm's employees OR the firm's tangible assets. As discussed above, born globals are most often knowledge-intensive or knowledge-based firms, both of which can be defined as those having a high value added to scientific knowledge in both products and processes (Bell *et al*, 2003). These firms are often found in high-tech, high-design, high-service, high-know-how, and high-system fields (Luostarinen & Gabrielsson, 2006). The assertion that knowledge is “the most strategically-significant resource of the firm” (Grant, 1996:375) becomes especially apparent in the SME context, as these firms combine the unique specialized knowledge of a small number of their employees to create their products, services, to innovate and continuously update their offerings. Differentiation and innovation are the most viable competitive strategies for born globals, as they do not possess the advantages of the economies of scale and scope, held by their larger competitors.

Coming from this line of thinking, I realized that the knowledge-based view and the organizational capability perspective conceptualize the core of what I was observing in my empirical work every day. *The knowledge held by the firm's individual employees and the firm's ability to integrate that knowledge into organizational capabilities* (Grant, 1996;

*1996a) is what made its existence possible, its products and services competitive and its operations profitable.*

On the other hand, the reality of international operations of born globals is very complex, and it cannot be viewed using only one theoretical perspective. The international entrepreneurship field is characterized by combining several theoretical perspectives: to start with, it is a combination of insights from international business and entrepreneurship, as the name of the field suggests (McDougall & Oviatt, 2000). The field also brings in insights from strategy, networking theory and learning theory, to name a few (Rialp *et al.*, 2005). For example, one cannot discuss long-term competitive capabilities of an organization without including organisational learning and evolution of the capabilities. The dynamic capabilities perspective combines precisely these two – organizational capabilities and organizational learning (Teece *et al.*, 1997; Teece, 2007; Zahra *et al.*, 2006). Obviously, the entrepreneurial aspect cannot be left out, as born globals are inherently entrepreneurial organizations, and entrepreneurship is an important part of their competitive equation.

Therefore, in this dissertation, the knowledge-based view as the overarching basis for the theoretical discussion is applied. The focus is on exploring the specific organizational capabilities, while continuously keeping the entrepreneurial aspect of born globals' operations in the discussion. Besides, in each separate article, I build on the existing literature on each of the functions in focus, i.e. R&D management, alliance management, brand management, knowledge management and managerial capabilities. Finally, in the conclusions, the cumulative findings from the study are analyzed from the learning perspective.

Below, an overview of the KBV and the organisational capabilities perspective is presented. It includes a brief overview of the field's origins, and the important discussions that have been and are ongoing about the organisational and dynamic capabilities. This is followed by

an explanation of the choice of capability conceptualization used in this dissertation.

## 2.3 Knowledge-based view of the firm and strategy

Francis Bacon (1597) is said to have been the first to describe knowledge as power (Denton, 1998). In business operations, the central importance of knowledge became apparent after World War 2 when the importance of the traditional factors of production - land and capital, started diminishing, while the role of labour, and particularly of intellectual labour, started rising into prominence (*ibid.*). Part of the reason for this shift was the increasing importance of the tertiary sector of the economy (services) relative to the secondary sector (manufacturing), and even more importantly, relative to the primary sector (agriculture, fishing and extraction of raw materials). The ready availability of capital that the business sphere was characterized by since 1945 possibly influenced the trend (*ibid.*).

In his *Post-Capitalist Society* (1993), Peter Drucker argued that knowledge has become the central resource in our society:

... the real, controlling resource and the absolutely decisive “factor of production” is now neither capital nor land nor labour. It is knowledge. (p. 6)

The significance of entrepreneurship began to be recognized later on as the fourth factor of production (Denton, 1998).

According to Drucker (1993), value in our society is created by productivity and innovation, both of which are application of knowledge to work. The leading social group of our society already are and will continue to be “knowledge workers” – the specialists that know how to allocate knowledge to productive use. This leads to the society of organizations, where application of knowledge happens.



The view of knowledge as the central building block of our society and organizations has gradually become established in the academia. Several streams of academic thought have led to the emergence of the Knowledge-Based View of the firm and strategy (KBV) in the 1990s.

One of the precursors was the organizational learning perspective, where learning can be defined as “the process by which new information is incorporated into the behaviour of agents, changing their patterns of behaviour and possibly, but not always, leading to better outcomes.” (Eisenhardt & Santos, 2002:141). Penrose (1959) in her classic *The Theory of the Growth of the Firm* was among the first to discuss how organizations create new knowledge through learning processes and form the basis for their growth through re-combinations of existing resources.

Cyert & March (1963) in their *Behavioural Theory of the Firm* developed the framework of organizational routines, which form the basis of collective learning in organizations. The routines are seen as implementable capabilities for repeated performance that have been learned by an organization in response to selective pressures (Cohen *et al.*, 1996). Routines represent a manifestation of organizational memory in that they encode inferences from history and guide individual and group behaviour in organizations. Organizational learning, therefore, is perceived as an adaptive change process that is influenced by past experiences, focused on developing and modification of routines, and supported by organizational memory.

Nelson and Winter (1982) were among the first to integrate organizational knowledge and routines with the notion of dynamic competitive environments (Eisenhardt & Santos, 2002). In their development of the evolutionary economics, a firm is understood as a repository of knowledge, which is represented by routines that guide organizational action. The authors see individuals responding to information complexity with their skills and routine organizational activities, in line with the behavioural tradition.

The second source of the KBV was the dynamic capabilities theorizing (Eisenhardt & Santos, 2002). The increasingly dynamic environments have led scholars to question the sustainability of superior performance provided by any particular strategic position (Porter, 1985); bundles of resources (Barney, 1991; 1986; Wernerfelt, 1984); or a set of strategic moves (Shapiro, 1989). Understanding of a firm's superior performance at any point in time explains very little about how superior performance can be achieved in the long run or whether it can be achieved at all (Grant, 1996; Eisenhardt & Martin, 2000). In dynamic market environments, where industry characteristics, boundaries of the firm, and sets of competitors and customers are continuously changing, no specific advantage can be sustainable. Therefore, continuous innovation, fast learning, adaptability and continuous resource reconfiguration serve as sources of continuously emerging short-term competitive advantages (Teece, 2007).

Nonaka and colleagues (Nonaka, 1994; Nonaka & Takeuchi, 1995; Nonaka *et al*, 2000) developed the theory of the firm as of a knowledge creating entity, which has found acceptance in the innovation management and organizational learning literature. The roots of this thinking are in the Japanese intellectual tradition that emphasizes oneness (unity) of humanity and nature, of the body and mind and of self and other; which contrasts with the fundamental 'Cartesian split' of the Western philosophy. The other influence was the work of Polanyi (1966; in Nonaka & Takeuchi, 1995) who believed that humans create knowledge by involving themselves with objects – through self-involvement and commitment. In the theorizing of Nonaka and colleagues, great importance is placed upon tacit knowledge, which is a major bottom part of the 'iceberg of individual knowledge'; while the small visible tip is explicit knowledge. Nonaka & Takeuchi (1995:58) provide a dynamic definition of knowledge as '*a dynamic human process of justifying personal belief towards the "truth"*'.

In the authors' conceptualization, a firm as a whole is capable to continuously create new knowledge, disseminate it throughout the

organization and embody it into products, services and systems. A firm's capability to create and utilize knowledge is its most important source of competitive advantage, and its very reason for existence (Nonaka *et al*, 2000). Organizational knowledge creation starts with individual knowledge creation and is seen as a set of processes that amplify knowledge created by individuals and crystallize it as part of the knowledge network of the organization.

### Knowledge-based thinking in strategy

The KBV found a wide application in strategy theory. Kogut and Zander (1992) emphasized strategic importance of knowledge as a source of competitive advantage for firms. They argue that firms are better mechanisms for knowledge creation and transfer than markets. Knowledge (know-what and know-how) is held by individuals, while it is also embedded in organizing principles by which people voluntarily cooperate in the organizational context. Creation of new knowledge is dependent on the existing firm capabilities and organizing principles, hence knowledge creation in a firm evolves in a path-dependent way through the replication and recombination of existing knowledge. Kogut & Zander argue that a firm's ability to replicate knowledge determines its rate of growth, but such replication also facilitates imitation by competitors. Therefore, growth and simultaneous deterring of competitive imitation is only possible by continuous recombination of the knowledge base of the firm through its *combinative capabilities* and application of the new knowledge to new market opportunities. Thus, superior performance can only be sustained through continuous innovation.

Robert Grant developed the knowledge-based view both as a theory of organization (Grant, 1996a) and strategy (1996), which has become a widely accepted knowledge-based perspective in the strategy field (Eisenhardt & Santos, 2002). According to Grant, knowledge is the single most critical resource for developing and sustaining competitive advantage by firms. Knowledge accounts for the greater part of value

added; and barriers to the transfer and replication of knowledge make it strategic. Grant's theorizing is based on Simon's reasoning that all learning happens inside individual human heads; hence the organization learns in only two ways: (a) through the learning of its members, or (b) by integrating new members who have the knowledge that the organization did not previously have (Simon, 1991; in Grant, 1996).

Grant conceptualizes a business organization as a framework for integrating individual, specialized and often tacit knowledge, which is an organisational form superior to the market mechanisms. Grant discusses that both explicit and tacit knowledge is valuable, but, in line with Nonaka and colleagues, he places a stronger emphasis on tacit knowledge. Specialized tacit knowledge is normally what constitutes expert knowledge, and this is the type that is most difficult to transfer and imitate. Hence, it carries the largest potential for long-term competitive advantage. Grant discusses four mechanisms for integrating specialized knowledge: rules and directives, sequencing, routines, group problem solving and decision making. Furthermore, some level of common knowledge is necessary in a firm for efficient knowledge integration (in line with knowledge redundancy discussed by Nonaka, 1994).

Grant (1996, 1996a) draws a direct connection between the KBV and organizational capabilities. Organizational capabilities are viewed as the processes that enable organizations to coordinate specialized knowledge of their members through integrating individual specialized knowledge:

Integration of specialist knowledge to perform a discrete productive task is the essence of *organizational capability*, defined as a firm's ability to perform repeatedly a productive task which relates either directly or indirectly to a firm's capacity for creating value through effecting the transformation of inputs into outputs. Most organizational capabilities require integrating the specialist knowledge bases of a number of individuals. (1996:377)

Grant discusses three characteristics of knowledge integration as being relevant to gaining competitive advantage and the associated rents: efficiency of integration, scope of integration, and flexibility of integration. The mechanisms for knowledge integration and formation of organizational capabilities are: (i) Direction – the principal means by which knowledge can be communicated at low cost between specialists and the large number of other persons. It involves codifying tacit knowledge into rules and instructions. (ii) Organizational routines, which provide mechanisms that are not dependent upon the need for communicating knowledge in explicit form. The longevity of competitive advantage depends on the imitability of the capabilities that underlie this advantage. Therefore, the broader the scope of the knowledge being integrated by a capability, the more difficult it is to imitate.

Grant stresses equifinality of organizational capabilities: due to organizational idiosyncrasy and its institutional heritage, it is impossible to specify the organizational arrangements for the formation of organizational capabilities. Firms can achieve equally effective, although differentiated approaches to knowledge integration.

The dynamic aspect of capabilities is stressed in Grant's framework in the discussion about the fact that maintaining superior performance levels ultimately requires continual renewal of a firm's competitive advantage through innovation and development of new capabilities. The necessity of continuous updating of a firm's organizational capabilities points to the viability of leveraging organizational and personal networks. Networks are viable where there is a lack of perfect correspondence between the knowledge domain and product domain of individual firms, or addressing uncertainty over product-knowledge linkages. Networks are well suited for transfer and integration of tacit knowledge: they provide flexibility and relative speed in knowledge transfer, critical to the establishment of first-mover advantages in dynamic markets (*ibid.*).

The critics of the KBV argue that the strategy literature uses a simplistic concept of knowledge as a resource. Other authors have suggested other, richer conceptualizations of knowledge-based thinking: in terms of different types of knowing (Cook & Brown, 1999) and understanding knowledge in terms of emergence and identity (Kogut & Zander, 1996; Spender, 1996). In spite of this criticism, the KBV in the conceptualization of Grant (1996a), with contributions from other authors (i.e. Kogut & Zander, 1996) is being increasingly more applied in strategy and international entrepreneurship literature. In their literature review, Eisenhardt & Santos (2002) conclude that although the KBV cannot yet be considered a new theory of organization or strategy since its basic tenets have not received empirical proof, the KBV offers a set of important insights into the fundamental knowledge processes related to strategic phenomena ranging from alliances and acquisitions to strategic decision making and innovation. The KBV theorizing has been accepted and applied by numerous scholars in various fields of organization and management studies. In relation to the theory discussed in this dissertation, the KBV has produced insightful theorizing in international entrepreneurship (Knight & Cavusgil, 2004; Knight *et al.*, 2004; Knight & Kim, 2009; Autio *et al.*, 2000), alliance management theory (Kale *et al.*, 2002; Kale & Singh, 2007; Grant & Baden-Fuller, 2004) and the large field of competence-based competition and knowledge management (Sanchez & Heene, 1996; Sanchez, 2001).

## 2.4 Organizational capabilities

The wider organizational capability theorizing has grown out of the resource-based view of the firm and strategy, which postulates that a firms' valuable, rare, imperfectly imitable and non-substitutable (VRIN) resources and capabilities serve as a source of a firm's competitive advantage (Barney, 1991, 1986; Grant, 1991; Peteraf, 1993). Besides the conceptualization of Grant presented above (for the purpose of presenting his theory uninterrupted), the more prominent

conceptualizations of organizational and dynamic capabilities are discussed below and summarized in Table 2.4. They represent, to a degree, the ongoing academic debate on this issue. My choice of conceptualisations used in this dissertation is presented afterwards.

A co-author of the evolutionary theory of the firm, Sidney Winter (2003) discusses that a firm's organizational capability

... is a high-level routine (or collection of routines) that, together with its implementing input flows, confers upon an organization's management a set of decision options for producing significant outputs of a particular type. (p. 991)

'Routine' means a behaviour that is learned, highly patterned, repetitious or quasi-repetitious and founded in part in tacit knowledge. Winter discusses 'zero-level' organizational capabilities, which are high-level routines that a company engages in order to 'earn its living now'.

Winter's earlier writing with co-authors in Dosi, Nelson & Winter (2000) contains a somewhat different discussion of the nature of capabilities. The authors discuss that an organizational capability is a fairly large unit of discussion: it is one that is characterized by a purpose it is meant to achieve. It is significantly shaped by conscious decisions in its development and deployment. These features distinguish organizational capabilities from routines. Capabilities involve organized activity, and the exercise of capability is typically repetitious in substantial part. Hence, routines are one of the 'building blocks' of capabilities. Individual skills are another building block. The authors discuss 'skills of organization' as "the collectivity of skills possessed by individuals in the organization, regardless of whether the skills are modular, organization-specific, or not organization-related at all." (p. 5). Routines have the major function of coordinating the skills of organizations for turning the collectivity of skills into a useful effect. Other building blocks of capabilities may be technology and other contextual requisites that support organizational routines.

The discussion of Bingham *et al* (2007; 2007a) makes an important contribution to the conceptualization of capabilities specifically for firms operating in dynamic environments. In contrast to Grant (1996) and Winter (2003), Bingham with co-authors argue that capabilities consists of routines only in stable environments. Heterogeneous and dynamic environments, on the contrary, require flexibility and adaptability in organizational behaviour, and these are *organizational processes* that serve as capability building blocks. Organizational processes are “sets of actions that repeat over time and are used to accomplish some business purpose” (2007:3), developed through cognitive heuristics. Heuristics are articulated and often informal rules of thumb shared by multiple participants in the firm. Firms learn increasingly sophisticated portfolios of heuristics that guide their actions, but leave sufficient room for flexibility and improvisation in new situations. Heuristics are accumulated through experiential learning; they combine best practices with firm-specific uniqueness. Managerial heuristics focus on opportunity capture, which gives room for flexibility, adaptation and learning. The increasingly complex organizational heuristics lead to an improvement of organizational processes and building of *organizational expertise* or *organizational skills*. Organizational expertise is defined as the “consciously accumulated, specialized skills that represent mastery of a particular organizational process” (Bingham *et al*, 2007:32).

My understanding of what constitutes a capability evolved along with the research process and an ongoing literature review. First, Grant’s (1996) conceptualization of organizational capabilities was selected because it emphasizes individual tacit knowledge more than other frameworks. This conceptualization was applied in the article on the branding capability, which was written first of the four. However, in that article, the micro-foundations of the capability were not discussed, as the results of the empirical research showed that the branding capability is a rather high-level capability, which builds on a set of other large capabilities.



In the second article on the alliance capability, however, we did discuss the micro-foundations. The mechanisms of a capability in Grant's conceptualization are direction and routines. The empirical research was showing, however, that the building blocks of the alliance capability were everything but routine. The managers engaged in highly adaptive and flexible processes when managing the firm's alliances, the processes that often involved a lot of discussion and situational decision making. I started looking for other literature and found the more recent works of Bingham *et al* (2007; 2007a) who studied small entrepreneurial ventures. They had also concluded that the building blocks of the firms' capabilities were not routines, but rather semi-structured and adaptive organizational processes guided by managerial heuristics. This framework reflected our empirical findings much better; it discussed a similar type of firms and dynamic environments was also the context of the case venture (international technology markets). The explanation that the dynamic environments call for more flexible processes rather than for established routines is also logically sound. Hence, the conceptualization of organizational capability following Bingham *et al* (2007; 2007a) was applied in the rest of the articles and theoretical discussions in the dissertation.

## 2.5 Dynamic capabilities

Another key and widely discussed concept in the capability literature are *dynamic capabilities*. Teece & Pisano (1994) were the first to introduce the concept, and developed it further in the widely cited article of Teece, Pisano & Shuen (1997). Dynamic capabilities are defined as

the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments. Dynamic capabilities thus reflect an organization's ability to achieve new and innovative forms of competitive advantage given path dependencies and market positions (...). (Teece et al, 1997:516)

The term “dynamic” refers to the capability of a firm to renew its competences so as to achieve congruence with a rapidly changing and unpredictable environment. The term “capabilities” emphasizes the key role of strategic management in adapting, integrating and re-configuring internal and external organizational skills, resources and functional competences toward the changing environment (*ibid.*).

In line with Bingham *et al* (2007), Teece *et al* (1997) discuss that a firm’s business processes shaped by its asset positions and moulded by its evolutionary and co-evolutionary paths explain the essence of the firm’s dynamic capabilities and its competitive advantage. All levels of organisational capabilities, and especially dynamic capabilities often carry a significant tacit component, which makes complex capabilities next to impossible to imitate, short of hiring away the key people and reproducing all the processes. This makes such capabilities a potential source of competitive advantage.

The key organizational and managerial processes in developing dynamic capabilities are: 1) coordination / integration of the firm’s internal activities, as well as integrating activities from outside the firm. 2) Learning – a process, in which repetition and experimentation enable more effective and efficient task performance and identification of production opportunities. 3) Reconfiguration and transformation of the firm’s asset structure to accomplish the internal and external transformations necessary for meeting the needs of the changing environment (Teece *et al*, 1997).

In a highly valuable contribution to the KBV, Zahra *et al* (2006) present a comprehensive framework that explains the relationship of the knowledge base, substantive and dynamic capabilities in an organisation. A firm’s entrepreneurial activities, which centre on the identification and exploitation of opportunities, influence the selection of resources and skills by the firm, and promote its organizational learning processes to capture external knowledge in new situations. These choices together act to create the base of knowledge and

substantive capabilities of the organisation. The knowledge base and the substantive capabilities continuously affect one another and together determine, which dynamic capabilities are necessary to adapt to the emerging conditions. The dynamic capabilities are affected by and, in turn, transform substantive capabilities and the firm's knowledge base, and thus indirectly affect organizational performance. Finally, the performance results affect future entrepreneurial choices (p. 926).

A firm's substantive capabilities are altered through the learning processes of improvisation, trial-and-error, experimentation and in some cases, imitation. The discussion emphasizes that dynamic capabilities do not directly affect the firm's financial performance, since in themselves, dynamic capabilities do not involve productive activity. They contain the *ability to reconfigure the firm's substantive and productive capabilities* and hence, *the potential* to influence the firm's performance. The realized value of dynamic capabilities depends on the environmental conditions (the potential gain from dynamic capabilities is greater in dynamic environments) and organizational knowledge (Zahra *et al.*, 2006).

Finally, David Teece (2007) presents a very comprehensive and a more operationalized framework of dynamic capabilities, mostly applicable to very large, multi-business-unit organisations. It is discussed that the micro foundations of dynamic capabilities are *distinct skills, processes, procedures, organizational structures, decision rules and disciplines, which undergird enterprise-level sensing, seizing and reconfiguring of a firm's resources to sustain performance in highly dynamic environments*. The framework defines specific organizational elements that compose the three distinct types of dynamic capabilities – sensing and seizing of opportunities and reconfiguring of organizational resources.

Dynamic capabilities are discussed as *meta-capabilities*, which coordinate and renew operational organizational capabilities and shape

the firm's activities in response to the environmental and internal changes (in-line with Winter, 2003; Collis, 1994).

Dynamic capabilities ... relate to high-level activities that link to management's ability to sense and then seize opportunities, navigate threats, and combine and reconfigure specialized and co-specialized assets to meet changing customer needs, and to sustain and amplify evolutionary fitness, thereby building long-run value for investors. (Teece, 2007:1344) ... They also embrace the enterprise's capacity to shape the ecosystem it occupies, develop new products and processes, and design and implement viable business models. (Teece, 2007:1320)

The literature (Zahra *et al*, 2006; Teece, 2007; Weerawardena *et al*, 2007) allocates the central role in developing a firm's dynamic capabilities to the managers/key decision makers: their choices, visions and integration skills. Zahra *et al* (2006) emphasize that "there is a need for managerial vision in thinking about the firm's competitive arena and the trajectory of its future evolution." (p. 944-5) Dynamic capabilities, on which the competitive advantage of the firm rests, do not merely accrue to the firm (from a good fit with the industry and environmental requirements), but are developed consciously and systematically by the wilful choices and actions of the firm's leaders (Grant, 1996; Teece *et al*, 1997). In Teece's (2007) framework, the management's *orchestration skills* as the key to successful development of a firm's dynamic capabilities: these are the managerial and organizational processes of coordinating/integrating, learning, and reconfiguring a firm's resources and competencies. Key strategic function of an enterprise's management is to find new value-enhancing combinations inside the enterprise, between and among enterprises, and with external supporting institutions. The dynamic capabilities framework recognizes that a firm is shaped by, but is not trapped by its past. The management can re-shape the organization by investment choices and other decisions, and the enterprise can shape its ecosystem.

On a more practical note, Winter (2003) discusses that prominent examples of dynamic capabilities generally involve a lot of specialized

personnel committed full-time to their change roles, as well as other investments. For some firms, the benefits added by institutionalized dynamic capabilities do not justify the costs. Change is better achieved through ad-hoc solutions, with the corresponding ad-hoc costs. However, for the firms operating in dynamically changing environments that are prone to destroying the firms' basic-level capabilities, investing into developing higher-order dynamic capabilities that lead to flexibility in such markets are necessary to preserve the firms' competitive advantage, profitability and even existence. Winter concludes that although the dynamic capability concept is a useful tool in strategic management, "There is no general rule for riches." (2003:994) Strategic analysis remains a matter of understanding how idiosyncratic attributes of each individual firm shape its prospects in specific competitive contexts.

Considering Winter's (2003) argument above, one could infer that small firms would probably be the type of organisations where establishing specific functions aimed at running the dynamic capabilities would neither be necessary, nor affordable due to the small firm size and limited resources. However, after having completed the studies of three substantive-level organisational capabilities – branding, alliance and R&D-related capabilities in the case venture, I felt that another level of study was missing. By that time, the firm had been 10 years old. The external, as well as internal organisational conditions had been changing – the firm had grown, expanded its operations into several markets. The management had partly changed – the founder had left the organisation. And very importantly – a harsh crisis and then a recession hit the international economy. Nevertheless, the firm was managing to adopt, survive and even grow its year-on-year profits (even though its mother firm was struggling). These observations had led me to search for processes that could constitute possible *dynamic capabilities* of the organisation.

The discovery was not obvious as, first of all, the discussion of what dynamic capabilities and their constitutive elements actually were was

not at all settled in the literature. There were dissonant, authoritative voices arguing that the dynamic capabilities were nothing more than a set of best practices of specific substantive capabilities (Eisenhardt & Martin, 2000). Various authors were conducting empirical studies using different conceptualizations. Furthermore, most frameworks discuss dynamic capabilities in relation to very large organisations, as e.g., Winter (2003) and Teece (2007) mentioned above. Only after having covered a lot of literature on the subject and having written a conference paper with a case study of another entrepreneurial venture, did I reach an understanding of what a dynamic capability could mean in the context of a small firm.

By having systematically reviewed the case firm's history, having distinguished the various stages in its development, and having singled out the key actors whose actions seemed to be most influential in each of the stages, managerial action was defined as the main mechanism of the dynamic capabilities (although it may seem rather obvious now, it was not during the research process). I then reviewed the literature on managerial capabilities and knowledge management and conducted the study as presented in Article 4. As for the dynamic capability frameworks, it was impossible to apply any single one directly, while the knowledge contained in all of them combined helped to build my understanding and development of the concept of managerial capability. I am particularly grateful for the explanations found in the framework of Zahra *et al* (2006).

Table 2.4 Overview of the various organizational capability frameworks

*organized alphabetically by author*

*DC – dynamic capabilities*

*CA – competitive advantage*

Author	Concept	Source of competitive advantage (CA)	Mechanisms	Characteristics
Collis (1994)	Different levels of organizational capabilities	Organizational capabilities is only one of the factors composing a firm's local and temporary CA	1st level: functional activities; 2nd level: processes of improving functional activities; 3rd level: metaphysical strategic insights that enable firms to recognize value of other resources or develop novel strategies ahead of competitors.	Sceptical about organizational capabilities as a sole source of CA or of sustained CA.
Dosi <i>et al</i> (2000)	Organizational capabilities	Not discussed	Routines, individual skills and other supporting contextual requisites	Capability is a large-scale unit of analysis
Eisenhardt & Martin (2000)	Dynamic capabilities	Asset configurations, rearranged through dynamic capabilities	Regular organizational processes, i.e. alliancing, strategic planning, etc.	Equifinal, carrying a high level of commonality across firms and industries – “best practices”
Grant (1996)	Organizational capabilities	Knowledge and processes for knowledge integration inside firms	Direction and routines	Idiosyncratic, equifinal

Teece (2007)	Dynamic capabilities	DC as a meta-competence for sensing and understanding opportunities, seizing them and reconfiguring a firm's resources and competences	Distinct skills, processes, procedures, organizational structures, decision rules and disciplines, which undergird enterprise-level sensing, seizing and reconfiguring of a firm's resources	DC as an implementation of entrepreneurial management
Teece & Pisano (1994) Teece <i>et al</i> (1997)	Dynamic capabilities	Organizational structure and processes of firms	Business processes shaped by a firm's asset positions and moulded by its evolutionary and co-evolutionary paths	Idiosyncratic, often tacit in nature
Winter (2003)	Distinction b/w capabilities and dynamic capabilities	Idiosyncratic strategic analysis	Organizational routines	Capabilities may be of different order; DC are the routines for implementing change.
Zahra <i>et al</i> (2005)	A theoretical discussion on (1) how substantive capabilities and DC relate to one another, (2) how this relationship is moderated by organizational knowledge and skills, (3) how organizational age affects the speed of utilization of DC and the learning mode used in organizational change, (4) how organizational knowledge and market dynamism affect the likely value of DC.			



## 2.6 KBV and organizational capabilities in the international entrepreneurship literature

The field of international entrepreneurship and INVs does not have a unifying paradigm and is characterized by a variety of theoretical approaches (Di Gregorio *et al.*, 2008; Zahra & George, 2002; McDougall & Oviatt, 2000; 2003). Various approaches are taken to explain various aspects of the phenomenon. However, when the research questions relate to the factors that engender rapid internationalization, sources of competitive advantage of born globals, an increasing number of authors apply the KBV and the organizational and dynamic capabilities theory. Since the purpose of this dissertation belongs to this range of research questions, it is natural that I looked into the KBV and organisational capability perspective and finally chose it over other approaches, as discussed in the Introduction. Below, the thinking behind this approach in application to INVs is discussed. I further discuss some of the literature where this approach has been applied, and how the findings have been useful for my research.

It is argued that being limited in tangible resources, and having to deal with the liabilities of newness and foreignness in the first several years of operations, born globals leverage a set of unique, knowledge-based capabilities in order to achieve and sustain their successful international performance (Knight & Cavusgil, 2004). Knowledge is said to be a firm's most critical resource (Grant, 1996; Knight & Cavusgil, 2004), and it is through *the integration of specialized knowledge of individuals* that born globals achieve successful operations. The role of each individual in these firms is particularly pronounced, since the number of employees in such firms is relatively low. This is the key insight that caused me to choose the KBV and organisational capabilities as the main theoretical approach in this research.

The explanatory power of the KBV and the related organizational capability perspective lies in the very nature of born globals: often, these

are technology- and design-based companies, which besides their knowledge and human resources, have very little. It is the unique skills and knowledge of their employees that makes these firms successful, as opposed to technology processes, real estate, factories or any other tangible resource of larger organizations. Patents could be argued to be a tangible resource, but it is *application* of the knowledge stored in patents to developing products or services that carries value. Therefore, application of the knowledge-based view and the organizational capability perspective has high potential in explaining sources of competitive advantage of new ventures in the long term.

The conclusion of Rialp *et al* (2005:162) after an extensive literature review of the international entrepreneurship literature supports the argument:

This organizational capability perspective could, in our opinion, constitute one of the most promising theoretical frameworks from which to explain and interpret not only the emergence of early internationalizing firms but also its further development in the form of a rapid and sustained international growth. In addition, such a perspective on the behaviour of international start-up companies seems to offer a better explanation of the foreign market entry decision-process than the one offered by other rival approaches.

I would now like to review and discuss the existing academic works where authors attempted to investigate the sources of competitive advantage of born globals, including the articles aimed at researching organizational capabilities of such firms.

### 2.6.1 Capabilities as for rapid start-up internationalization discussed in the literature

An interesting study, which helps to understand the nature of born globals, has been published by Gassmann & Keupp (2007). The authors set out to identify the sources of born globals' competitive advantage that enables their internationalization process *at all*. The study shows how these capabilities are generated, sustained and

protected, and how born globals transform their specialized knowledge into business performance given their lack of tangible resources. Based on six case studies from the biotechnology sector in Germany, Austria and Switzerland, the authors have found the following (explained here but formulated as hypotheses in the article):

- An SME's internationalization is not necessarily contingent on developing and marketing its own products. The competitive advantage of born globals in the study was based on their profound knowledge of biochemical processes, innovativeness and risk taking attitude, which allowed them to utilize the channels provided by MNCs and supply particular segments of their products or services.
- Product/service homogeneity has shown to be an important aspect of the international competitive advantage, since if the firm's functions and benefits of the products/services can provide universal applicability, the firm would be able to internationalize rapidly even if it is located only in its country of origin. This point, however, is contingent on the industry structure.
- An important aspect of a firm's competitive advantage in the international markets is its ability to develop innovations incrementally, rather than radically. Born globals do not require breakthrough innovation, which may take decades to mature, to internationalize. An important aspect of born globals' competitive advantage lies in the uniqueness or superiority of their products/services – their 'innovative uniqueness', which stems from their specialized knowledge (a point supported in numerous other studies).
- Early and rapid internationalization is argued to be positively associated with the firm's scope and extent of IPR protection. The IPR protection can be: formal, enforced by patents and litigation; in form of rapid and continuous upgrading of the firm's knowledge outputs; and 'factual', where the

technological complexity and tacit knowledge behind the products / services is hard to imitate.

- A firm's embeddedness in global communities and social networks is highly conducive to its ability to internationalize.
- On the contrary, the importance of the firm's presence at a specific geographical location will negatively affect its rapid internationalization. A firm's necessarily fixed location and resource commitments will restrict its strategic moves as for (further) international activities.
- Finally, a firm's ability to replace ownership of tangible assets with access to their *usage* – arranging access 'on demand', will greatly assist the firm in overcoming its resource limitations and will positively influence its rapid internationalization. Networking plays an important role in achieving this flexibility.

The article of Knight & Cavusgil (2004) was probably the first attempt to conceptualize rapid firm internationalization from the knowledge-based and capabilities perspective. This article was also the main inspiration for this dissertation. Knight and Cavusgil studied the early internationalization phenomenon and tried to reveal the key orientation factors and strategies that engender long-term competitive advantage of born globals. The study consisted of a number of case studies of US born globals, followed by a confirmatory survey. The authors posit that superior performance of born globals is an outcome of their entrepreneurial and managerial knowledge and the resulting organizational capabilities (Grant, 1991; 1996). Firms with superior innovation and knowledge-creation processes are argued to have better developed and more advanced knowledge-creation routines and learning processes than other ventures.

The authors find that at the organizational level, international entrepreneurial orientation and international marketing orientation are the facilitating conditions that lead born globals to pursue a collection of business strategies, which, in turn, lead them to maximize their

international performance. The strategies are global technological competence, unique product development, quality focus, and leveraging of foreign distributor competences (see Knight & Cavusgil, 2004:129 for the conceptual model).

- *International entrepreneurial orientation* reflects an innovation-focused and internationally oriented managerial mindset of the firms' managers. This orientation appears to be particularly important as it drives born globals to develop high-quality and internationally competitive goods; which in turn, lead to the international success of the firms.
- *International marketing orientation*: refers to a managerial mindset that emphasizes creation of value for foreign customers using key marketing elements. It facilitates born globals with knowledge about the customers, products development and adaptation.

The following strategies have been found to be important to successful international performance: global technological competence, unique product development, quality focus and leveraging foreign distributor competences. Leveraging quality and technological excellence helps born globals to develop market offerings that appeal to niche markets around the world. Organizational activities related to innovation, R&D, knowledge development and leveraging of capabilities play an important role in developing and positioning the firms' product offerings. Having unique products may also lead to an international 'monopolistic advantage'. Collaborating with foreign distributors helps young firms to penetrate new markets relatively quickly, as well as to gather market intelligence, develop connections with key foreign contacts, deepen the relations within existing markets, and cultivate new buyer segments.

Gary Knight continued this line of thinking in his work with Daekwan Kim (Knight & Kim, 2009). They examined the role of specific organizational competences that engender success in an international

SME. After having conducted 16 case studies of SMEs and a confirmatory statistical study, they uncovered the collection of intangible capabilities, which they conceptualized as an *international business competence (IBC)* – an “intangible, overarching firm resource that engenders superior international performance in the international SME”. (p. 255)

IBC is conceptualized as a multidimensional concept that reflects the extent to which the SME adopts a bundle of international competences to carry out international business activities in foreign markets in an effective way. (p. 260)

The IBC is argued to be a source of competitive advantage for SMEs since it is to a large extent tacit – the culture, processes, organizational routines and knowledge are difficult for competitors to see and replicate. The IBC implicitly embraces the firm’s knowledge integration through its internationalization process, as the international business activities involve ongoing learning.

The IBC is conceptualized as consisting of an SME’s international orientation, international marketing skills, international innovativeness and international market orientation. These capabilities are said to influence international performance of SMEs as expressed in the international market share, international sales growth, international profitability and export intensity. The specific dimensions of the IBC are explained below:

1. *International orientation*: firms with a strong international orientation tend to be characterized by the managerial vision and a proactive organizational culture for developing specific resources aimed at achieving company goals in foreign markets. This involves having a strong international posture in order to take the initiative and pursue new opportunities abroad with limited home-based resources, in the conditions of new complex markets where the risks and uncertainty are high.

2. *International marketing skills* are conceptualized as “a firm’s ability to create value for foreign customers through effective segmentation and targeting, and through integrated international marketing activities by planning, controlling, and evaluating how marketing tools are organized to differentiate offerings from those of competitors.” (p. 260)
3. *International innovativeness* is the capacity to develop and introduce new processes, products, services or ideas to international markets. It results from two sources: the firm’s internal R&D that draws on the organizational knowledge base, and market intelligence, including innovations from other firms.
4. *International market orientation*: reflects the extent, to which a firm’s international business activities are oriented toward customers and competitors and the extent, to which these activities are coordinated across functional areas in the firm.

Through the confirmatory study, it has been found that a firm’s international market orientation and international orientation are the strongest indicators of the IBC, followed by international marketing skills. The impact of the IBC across the various performance variables was found to be consistent. The results showed that SMEs can enhance their international performance by establishing and skilfully managing the IBC.

The studies of Knight & Cavusgil (2004) and Knight & Kim (2009) have been very important to the formulation of the research question and finding the theoretical approach for this dissertation. The authors of these studies have touched upon very important questions: what engenders successful international performance of born globals? I have continued along this line of thinking and have decided to investigate in detail, which mechanisms could be the sources of long-term competitive advantage of born globals. In the discussion of each capability investigated in this dissertation, I have actively used the

findings of Knight & Cavusgil (2004) and Knight & Kim (2009) and built on them further. The international orientation (Knight & Kim, 2009) and international marketing orientation (Knight & Cavusgil, 2004; Knight & Kim, 2009) are the core concepts that run through all the studies in this dissertation, as they are the foundational to operations of any born global. International marketing skills (Knight & Kim, 2009) is a concept explicitly discussed in relation to the branding capability. The concept of global technological competence, unique product development (Knight & Cavusgil, 2004) and international innovativeness (Knight & Kim, 2009) are central to the discussion of the R&D-related capabilities and the managerial capability. These aspects are central to activities of any technology-based venture. International entrepreneurial orientation (Knight & Cavusgil, 2004; Knight & Kim, 2009) contributes to the discussion of the managerial capability. And leveraging of foreign distributor competences (Knight & Cavusgil, 2004) is discussed in the article on alliance capability.

### 2.6.2 The learning and knowledge management perspective

The knowledge management and learning-based perspectives are gradually entering the discussion on INVs and international entrepreneurship. Several authors have discussed the importance of learning and knowledge management in rapid firm internationalization and international operations of SMEs. Organisational learning processes are the mechanisms, through which organisational capabilities are developed (Zollo & Winter, 2002). The learning aspect of technology born globals' operations is discussed as a part of the R&D-related, alliance and managerial capabilities in this dissertation. It truly comes in focus in the Conclusions chapter, where the case born global's evolution and historical transition are analysed from the learning perspective. The following studies, among others, have made significant contributions to the understanding of INVs' nature and competitive advantage from the learning and knowledge management perspective.



Autio *et al* (2000) have discussed that knowledge-based resources are positively associated with performance in dynamic environments, while property-based resources are positively associated with performance in stable environments. The mobile knowledge-based resources give firms the flexibility necessary for operations and growth in foreign markets with limited resources. The advantages provided by the early internationalization are routines for learning the organisational processes that are best suited for dynamic international operations, They are labelled the 'learning advantages of newness' – which, however, do not remove the liabilities of newness, such as lack of reputation, social capital and lack of tangible resources (Stinchcombe, 1965).

Autio *et al* (2000) found that the age of a firm's internationalization affects the pace of its subsequent internationalization and growth through the learning mechanisms that the firm develops in its early years. Thus, the pace of a firm's international growth is regulated not only by the accumulation of foreign organizing knowledge, but also by the amount of time the firm has devoted solely to domestic operations. Because formation of organizational culture is cumulative, when a firm internationalizes early, it adapts an international identity, allowing it to be more aware, capable and willing to pursue international opportunities (Autio *et al*, 2000; ref. Penrose, 1959). This is consistent with the notion of the 'dominant logic' of firms (Bettis & Prahalad, 1995), and their 'absorptive capacity' (Cohen & Levinthal, 1990) – where a firm gets 'locked out' of certain types of knowledge if it does not acquire it early on in history, and afterwards, develops competency traps. The firms' existing competencies and experiential knowledge exert an influence on the firms' search processes, and hence, on its future development (Autio *et al*, 2000). It is suggested that cognitive, political, and relational patterns are easier to modify for younger firms, since managers over time develop biases, standard responses to problems and relational obligations that limit adaptation to new circumstances (ref. Cyert & March, 1963).

This discussion resonates with the concept of organizational ‘imprinting’ of Sapienza *et al* (2006) – the process by which events occurring in key development stages in a firm’s history have persistent and possibly lifelong consequences for the firm (ref. Hannan, 1998; Stinchcombe, 1965). Exposing firms to multiple and versatile exogenous and endogenous stimuli early on in their history creates an imprint for the firms’ adaptability to uncertain environments, the routines to react to them, and an internal receptivity to continuous change. The authors theorize that early development of dynamic capabilities that support a firm’s ability to internationalize may simultaneously decrease probability of its survival, but increase its probability of growth. The probability of survival is decreased because the young firms have to develop external and internal processes suitable for foreign entry. Plus, they lack the positional advantages that accrue to the more established and socially embedded firms. Both development of the routines and establishment of the positional advantages add costs and put a strain on the firm’s limited resources. These costs can be quite enduring; but are likely to decrease over subsequent entries into new countries, as the organization learns from its experiences. On the other hand, internationalization generates new opportunities for the firm and increases the probability of its growth.

Freeman *et al* (2010) emphasize the importance of *knowledge development* in rapid firm internationalization. They argue the managers can use both pre-existing and newly formed relationships and networks to quickly and proactively developing new knowledge for rapid product commercialization. Proactive and advanced relationship-building capability of the firms’ managers consists of locating partners with required technological knowledge, with a view to ensure ease of knowledge sharing between them and the born global. The authors argue that interpersonal relationships (of the born global managers through their earlier networks), inter-firm partnership and cooperating interdependence, which lead to trust, “may be viewed as the fastest and most expedient conduit of tacit knowledge” (p. 79). Tacit knowledge, in turn, increases the firms’ absorptive capacity. The authors posit that

the reason that knowledge sharing may proceed quickly is that shared 'technological knowledge' allows rapid transfer and development of new knowledge and the drive to commercialize a product before a competitor. This promotes a mutual need / co-dependency between the partners to act quickly, which is characteristic of technology-based industries, which face rapid change. As an outcome of the born global managers' ability to locate new partners through existing networks, new international links may be quickly developed, where the internationalization of the business may become an outcome, and not necessarily a driver of behaviour in smaller born global supply chains.

Zahra *et al* (2000) focused on technological learning in born globals, and specifically – on the effects of organisational cultural differences on technical learning. A large percentage of INVs are technology-based, many operate in high-tech industries (Moen, 2002; Jones, 1999), therefore technological learning is highly important for such firms and is fundamental to their competitive advantage. Technological learning influences the firms' ability to adapt the products to local markets, capitalize on the market dynamics through rapid new product development, and identify emerging technological changes (Zahra *et al*, 2000). Learning achieved through international operations is important for firms for building their competences and achieving high performance. The diversity of a firm's business environment enhances its knowledge stock through learning based on interactions with local knowledge bases, and exposure to different systems of innovation. Furthermore, the firms' access to 'soft' resources, such as international business relationships, also promotes learning and innovation (Zahra *et al*, 2000; ref. Ghoshal, 1987; Hitt *et al*, 1997). The arguments above suggest that international diversity affects technological learning, as demonstrated by acquisition of new technological skills. Furthermore, variations in competitive, scientific, technological and regulatory environments influences variations in technological learning of new ventures from different countries. Therefore, ventures operating in several countries are expected to differ from ventures operating only in

the domestic, or a single foreign market, in the breadth, depth and speed of their technological learning.

Finally, Weerawardena *et al* (2007) develop a dynamic capabilities view of accelerated internationalization and formulate several key learning capabilities that firms must develop for it. Dynamic capabilities are argued to be the routines, through which firms learn. Sources of the learning are the market, the firm's network of relationships and the learning that happens inside the firm. The learning capabilities conducive to rapid and successful internationalisation are argued to be:

- *Market-focused learning capability*, which is “the capacity of the firm, relative to its competitors, to acquire, disseminate, unlearn and integrate market information to create value activities.” (p. 300) It is argued that a major characteristic of entrepreneurship is not only to create products to meet customer demand ahead of competition, but also to create the products before customers recognize an explicit need for them. Born globals' *marketing capability* results from the firms' market-focused learning capability. The marketing capability is defined as “the results of an integrative process designed to apply the collective knowledge, skills and resources of the firm to the market-related needs of the business.” (p. 301) It requires a firm's capacity to formulate effective marketing mix strategies necessary for identifying and accessing international opportunities.
- *Internally focused learning capability*, which is characterized by the acquisition and dissemination of technological and non-technological information generated within the firm. It involves unlearning old and ineffective routines and the ability to integrate internally generated information into the knowledge base of the firm, which the management can then apply to internationalization activities. This capability captures all experimental learning inside the firm: technological and non-technological learning that engenders innovation and

enables the firm to respond to evolving environmental conditions. The learning draws on both external and internal sources.

- *Networking capability*: networks are very important for resource-starved born globals in discovering opportunities, testing new ideas, and collecting the resources for implementing new organizational structures. Networks help born globals to lower the risks and uncertainty in their operations, facilitate acquisition of knowledge and development of complementary resources.

A combination of the three learning capabilities leads to the creation of knowledge intensive and internationally competitive products. Finally, the knowledge-intensive products supported by the firm's marketing capability positively influence accelerated internationalization (see Weerawardena *et al*, 2007:299).

### 2.6.3 Specific substantive capabilities discussed in the literature

#### Networking and alliance-building capabilities

I will now turn to discussing the literature that focuses on exploring specific substantive capabilities of born globals.

Several authors have studied the *networking and alliance building capabilities* of born globals. Mort & Weerawardena (2006) studied the role of the networking capabilities in a born global's internationalization process. They conceptualized the *dynamic networking capability* which is "the capacity of the firm to develop a purposeful set of routines within its networks, resulting in the generation of new resource configurations and the firm's capacity to integrate, reconfigure, gain and release resource combinations." (p. 558)

The authors find that the dynamic networking capability characterises international entrepreneurship in born globals firms and plays a central

role in their rapid internationalization, development of knowledge-intensive products and international market performance. This capability has been found to be very important to the international growth of firms in both high-tech and low-tech sectors in that it enabled them to minimize the risks associated with international market entry decisions. This research is a significant contribution to showing how the networking capability can help born globals to overcome their 'resource poverty'. The influence of the networking capability is not restricted to impact on capital requirements and management skills, but, when supported with a high degree of international entrepreneurship, is instrumental in developing innovative products, locating new international markets and enhancing international performance of the firms.

The findings highlight the critical role of the internationally oriented entrepreneur /manager in systematically and intentionally developing the networking capability. However, this capability is not a "panacea for all ills": it must take a form of a competitive capability, complemented by the entrepreneurial opportunity-seeking behaviour.

Networking capabilities of firms change with the evolution of their internationalization process. An interesting negative effect of 'network rigidity' was discovered: involvement of a firm in a network may limit its strategic options since opportunities within a network have boundaries. This suggests the need to continuously reconfigure networks through the firms' dynamic network capabilities in order to recognize and seize opportunities in new markets.

Another contribution to the discussion on networking and alliance-building capabilities has been by Freeman *et al* (2006). The authors had identified three major constraints to firm internationalization: lack of economies of scale, lack of financial and knowledge resources, and aversion to risk taking; and used in-depth case studies to explore how born globals overcome these constraints in their rapid internationalization. It was found that born globals employ a mix of

five strategies, implemented simultaneously. These five strategies are classified as the *network development and alliance-building capabilities*:

1. Personal network contacts: senior managers in the firms have extensive long-term overseas contacts and express a passion for internationalization. These two factors serve as important antecedents to internationalization. The managers have also shown a willingness to take risks.
2. Strong relationships with large foreign customers and suppliers.
3. Client followership, which allows overcoming risks and expenses of new market entry. Winning a customer in a new market increases a firm's visibility in that market, leads to further referrals and allows the firm to build further relationships.
4. Investment in leading-edge technology and innovative processes provide the firms with first-mover advantages in international markets, which in turn, may be expected to lead them to earlier profitability. The research uncovered only born globals that are high-tech and innovative in their products or processes (the authors could not find born globals that were not high-tech in their industry or market leaders in their high-tech processes.) Hence, high-tech processes appear to underpin the achievement of early, rapid and sustained international growth.
5. Multiple modes of entry: born globals use multiple strategies, i.e. strategic alliances, JVs, wholly owned subsidiaries and client followership, enabling them to rapidly enter multiple markets and decrease the associated risks and costs.

Success of the born globals in the study was based on the strong international vision of the founders, their desire to be international market leaders, and the identification of specific international opportunities, added by the possession of international contacts and sales leads. Born globals in the study were able to achieve economies of scale soon after their establishment and share their financial burden and

risks through alliances and other types of partnerships, thus sheltering the firms from the full impact of accelerated growth.

### Marketing capability

Born globals' marketing capabilities / competences have also received sufficient attention in the literature: Knight, Madsen and Servais (2004) studied the key factors in the international success of born globals in the US and Denmark. Having conducted a number of case studies and a confirmatory statistical study, the authors have found that international marketing orientation, reflected through customer focus, and enacted through the strategies of product quality, marketing competence and product differentiation, positively affected international performance of born globals. Marketing competence was particularly emphasized as being critical to the firms' performance. "Marketing competence implies skilful handling of product adaptation and the marketing planning process, control of marketing activities, prowess in differentiating the product, as well as being highly effective in pricing, advertising, and distribution." (p. 660) Product quality and product differentiation were also found to be important antecedents of firm performance in the US sample, but not important in the Danish sample.

The marketing capability of born globals was discussed by Weerawardena *et al* (2007) as resulting from the firms' market-focused learning capability, as discussed previously in this section. A number of other studies have also emphasized the importance of marketing skills /competences in rapid internationalization of SMEs, although the studies were not carried out from the organizational capability perspective (Gabrielsson, 2005; Luostarinen & Gabrielsson, 2006; Gabrielsson & Gabrielsson, 2003).



## Finance capability

Gabrielsson *et al* (2004) studied the *financing* strategies of born internationals and born globals. The authors have discussed various financing strategies employed by and desirable for born globals in different stages of their development. The conclusion was that the finance strategy selection and *finance management capabilities* have shown to influence the advancement of rapidly growing SMEs along the globalization process, which results in born international or born global companies, or in an alternative – an outright failure. Financial strategies and involvement of external management skills have shown to influence global management knowledge accumulation and quality of the resulting globalizing decisions. The authors, however, did not discuss specifically what constitutes a firm's finance management capabilities.

Born globals certainly need to have a number of organisational capabilities in order to be competitive in the international markets, and some of them are listed above. It would be impossible to discuss all of them, hence I had to choose the ones, which 1) I believed to be a source of a long-term competitive advantage, based on the literature and my empirical observations. 2) Where I could make a contribution with my empirical data. The networking and marketing capabilities are definitely two of the most important capabilities that enable born globals to reach both short-term and a long-term competitive advantage, as nearly every study of born globals suggests. Since the networking capability has been researched in detail by other authors, I decided not to focus on it. As for the marketing capability, the discussion of it is held continuously on the background in the studies in this dissertation. The notion of marketing is very large, so is the marketing capability. I felt that it would be difficult to make a focused study of it and therefore, decided to focus on the narrower branding capability, which is a part of the marketing capability. Important aspects of the marketing capability are discussed as elements of the

other capabilities in this study: the R&D-related capabilities, the alliance capability and even the managerial capability.

#### 2.6.4 Individual capabilities of the entrepreneur

Finally, Karra *et al* (2008) put a very strong emphasis on the individual entrepreneur in organizing an INV. The authors argue that the most salient factor in rapid internationalization of firms is not necessarily the nature of products or the market, but rather the individual characteristics of the entrepreneur. His or her experience, skills and networks allow the firm to develop the resources that enable it to become an INV or a born global. International vision is central in this process. It grows out of deep belief in the international nature of business and of the complex cultural knowledge and experiences of the entrepreneur. Hence, success of an INV appears to be largely underpinned by the individual entrepreneurial capabilities. Entrepreneurial competences, according to the authors include being alert to new commercial possibilities, combining existing resources in novel ways and articulating an inspiring vision, which draws other actors in.

The following individual entrepreneur's capabilities were found to be critical for establishing an INV:

1. International opportunity identification;
2. Institutional bridging: the ability to span the institutional distance between national contexts. The entrepreneurs need to develop detailed social and cultural knowledge about the markets they wish to enter:
  - Knowledge about potential customers and their buying behaviour,
  - Cultural knowledge about the norms and practices that underpin commercial transactions,
  - Knowledge of the legal and regulatory environments, both formal and informal.

Successful bridging requires development of a network of key actors and fostering human capital in each country of operations.

3. Preference and capacity for cross-cultural collaboration: it is necessary to build international ties with partners across different parts of the supply chain.

Karra *et al* (2008) have found that the determinants of success in INV creation go back to the time before the firm's establishment, to the experiences and networks of the entrepreneur and other people involved.

Other authors (Freeman *et al*, 2010; Mort & Weerawardena, 2006; Freeman *et al*, 2006) have highlighted the individual networking and alliance-building capabilities of born global entrepreneurs/managers. Weerawardena *et al* (2007) emphasize the international entrepreneurial orientation, a geocentric mindset, prior international experience and learning orientation of the entrepreneurs/managers, which shape the learning capabilities of their organisations, as discussed above.

Although personal characteristics of the founder/manager are certainly form-giving to any newly established venture, I have explicitly decided not to focus on the entrepreneur's / manager's personas in the study. My focus is on the *organisational factors / processes / capabilities* that enable competitive advantage of technology born globals in the long term. Founders and managers can come and go, but the focus of the study has been the organisational processes and characteristics embedded into the firm's everyday activities and strategy making that enable it to uphold its competitive position over time.

### 2.6.5 Reflections on the extant literature in relation to the research focus

In many of the studies discussed above, the authors tried to come up with a holistic model and 'formula' that would encompass all the

important success factors / sources of competitive advantage for a young SME that aims to internationalize rapidly. My attempt to aggregate the existing models into a wholesome one did not bring a satisfactory result, since the studies address slightly different aspects of born globals' operations and mostly discuss the rapid internationalization stage, albeit from different theoretical angles. Below is a list of the sources of successful international performance / enablers of rapid internationalisation for born globals that have been most prominently emphasized and discussed in the literature:

- Manager's / founder's characteristics:
  - global vision from inception,
  - prior international and industry experience,
  - learning orientation,
  - preference and capacity for cross-cultural collaboration,
  - the capacity for institutional bridging.
- International entrepreneurial orientation (of both the founder and the firm);
- International market / marketing orientation; management's commitment to international markets;
- International marketing capabilities / competences;
- Unique intangible assets based on knowledge management;
- Development of internationally innovative, knowledge-intensive products / services, focus on quality and differentiation;
- Global technological competence;
- Niche-focused, proactive international strategy, uniqueness of specialization in international value chains;
- Narrowly defined customer groups with strong customer orientation and close customer relationships;
- Intellectual property rights protection;
- Networking and alliance building capabilities;

- Leveraging foreign distributor competences and resources ‘on demand’;
- The learning orientations and learning capabilities: market-focused and internally-focused;
- Flexibility to adapt to rapidly changing external conditions.

These findings are certainly valuable in increasing our understanding of these SMEs. They explain the effect of various organizational culture aspects and strategies on firm performance and rapid internationalization. The studies have applied various approaches: extensive, using surveys, to describe the populations; these studies have included born globals from different world regions and industries. They also include intensive studies using a few case studies to describe specific capabilities.

However, the literature is only now beginning to turn its attention to the question of which specific organisational factors, processes, capabilities enable born globals’ competitive advantage *in the long term*, and how. That is, the question of what are the organisational factors and processes that enable long-term international competitive advantage of born globals and other INVs, considering their resource limitations, wide geographic stretch of operations and continuous competition from players of different sizes, including MNEs, remains largely open. This is where I am planning to contribute with this study.

I am certainly not aiming to provide a success formula for all types of born globals, since their operations are specific to their industries, types of market offerings, their skills and know-how, etc. However, through a close internal involvement in a successful high-tech Danish born global and the intensive longitudinal study that has been conducted, I have been able to identify several organizational capabilities that appear to be central to the firm’s competitive advantage throughout its history of nearly 12 years now and have enabled the firm to successfully overcome various challenges in its history. The firm has now turned into a stably

operating, profitable and growing organisation, in spite of the recent economic crisis and recession.

The associated organizational capabilities have not yet been explored from the process perspective in the literature, and the organisational factors and processes that enable development and effective operations of these capabilities have not been explained. Following the discussion presented in section 1.4 and explained in full detail in sections 3.5 – 3.5.4 in Methodology and Methods, I have singled out the following organizational capabilities and will be studying them using an intensive longitudinal process methodology:

- R&D-related capabilities,
- Alliance capability,
- Branding capability,
- Managerial capability.

When exploring each particular capability, I will naturally involve the specialized literature on managing the specific functional processes into the discussion in the individual articles. Such approach greatly benefits the discussion and also helps to explain how the practices of born globals differ from those of other SMEs and MNEs.

## 2.7 Expected theoretical contribution

First and foremost, this dissertation is meant to enrich the academic knowledge in the field of international entrepreneurship – the field created specifically due to the widespread appearance of INVs around the world.

Furthermore, I expect to contribute to the theoretical fields, which each specific capability in this study belongs to. The studies build on the existing literature in these fields, i.e. alliance management, R&D and innovation management, brand management, managerial capability, knowledge management, organisational learning and expect to enrich

these fields by developing theory in application specifically to born globals. This is a relatively new breed of firms, and the older theoretical fields are only beginning to develop their theory in relation to them. Meanwhile, as discussed in section 2.1.4, born globals have very specific characteristics and challenges, which distinguish them from other SMEs and other types of firms. I apply the existing theory in specific functional fields to studying born globals and discuss how the existing theory reflects the realities of operations of such firms, which theoretical aspects are applicable to them, and which and not very much so, and which additional insights I have found in my research that need to be added to the existing theory.

Finally in the concluding chapter, the cumulative findings from the study are analyzed from the learning perspective in order to pinpoint the transition of the firm’s operations and specific capabilities over time, and how the learning processes have contributed to it. The fields that I am building on and contributing to in this research are presented in Figure 2.1.

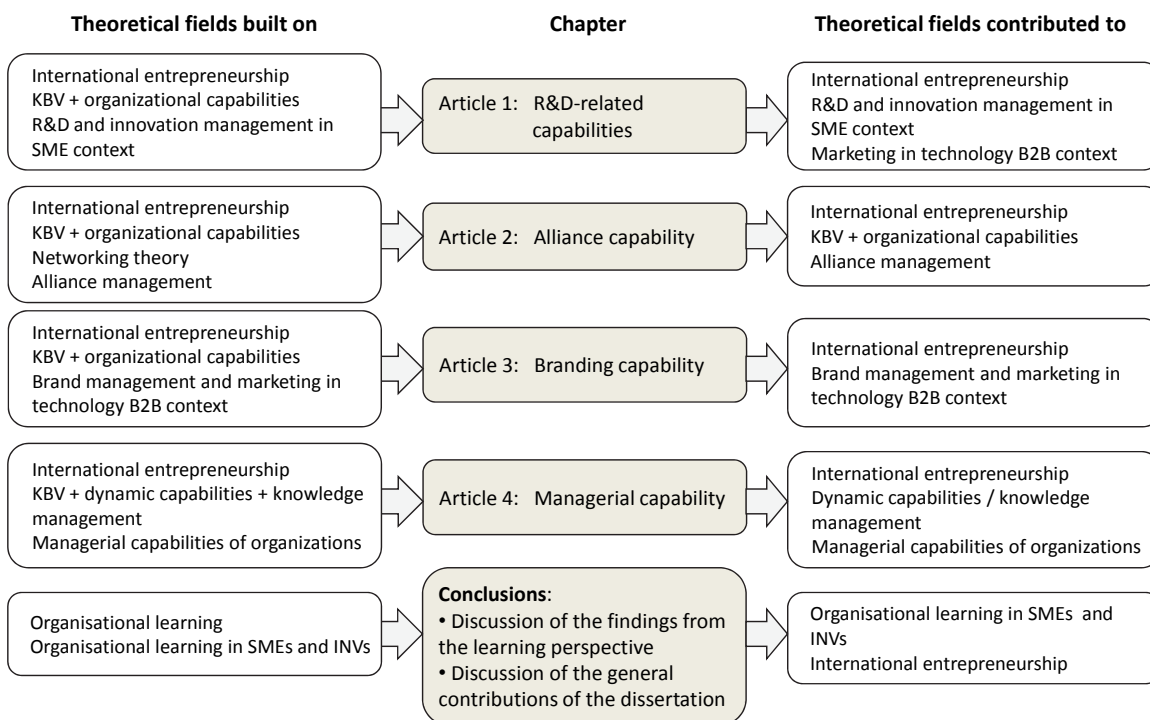


Figure 2.1 Theoretical fields built on and contributed to in this dissertation

# Chapter 3

## Methodology and Methods

### 3.1 Background

This research project arose from a learning partnership between the Institute of Economic Research at Lund University and a Danish high-technology born global and a manufacturer of amplification solutions, Bang & Olufsen ICEpower a/s. The collaboration started in August 2007 and lasted until July 2010, after which I received a full-time PhD position at the School of Economics and Management at Lund University to finalize the dissertation.

The purpose of the partnership was two-fold: the firm wanted advice on various strategic issues. The specific focus was not decided, however - there was a long list of research questions that I could choose from and develop further, which I eventually did. Secondly, and possibly, more importantly for the firm, they were lacking a marketing communications specialist at the time, and considering my long professional experience in this field, they saw funding me as a good opportunity to combine the two activities in one person. My position would be part-time and non-managerial, however: it included writing marketing texts, developing marketing materials, administering the website. The Institute of Economic Research set up the learning partnership, and the Department of Business Administration at Lund University gave me an academic home.

In this setup, I worked 20-70 percent of my time at the company (with a decreasing percentage of time as the project was progressing) in return for access to studying its daily operations. This setup provided an



effective opportunity to conduct a longitudinal process study at the firm and eventually helped to steer the focus that this dissertation has taken. I have been able to observe operations of a high-technology born global very closely, as an insider, and in a longitudinal fashion, which has enabled me to discuss its various organizational capabilities. These processes are very complex, involve numerous aspects of the firm's operations and organizational culture, and are to a large degree tacit and difficult to study without being very familiar with the firm's activities.

### 3.2 Ontological and epistemological considerations

In this work, I subscribe to the critical realist perspective. I discovered this philosophy of science about half-way through the PhD studies and since then attempted to conduct the studies and analysis in this dissertation following the guidelines laid out by the critical realist authors (Sayer, 1992; Danermark *et al*, 2002).

This philosophy of science was originated by the works of Bhaskar (1975, 1979), and has been developed further by other authors (e.g., Sayer, 1992, 2000; Archer *et al*, 1998). The basic tenets of critical realism will be described following Sayer (2000), as he offers a succinct presentation of this philosophy while building on the works of other prominent contributors. Afterwards, the application of critical realist principles to the case study methodology will be discussed.

The basic tenet of critical realism is the independence of the world from our thoughts about it. This relates to the fundamental distinction between the 'intransitive' and 'transitive' dimensions of knowledge made by Bhaskar (1975). The objects of science (and other kinds of propositional knowledge), in the sense of the things we study – physical processes or social phenomena, form the intransitive dimension of science. The theories and discourse that we develop as our means and resources of science are part of the world's transitive dimension, although as part of the social world they can also be treated as objects of

study. When our theories or thinking about the world (the transitive dimension) change, it does not mean that the intransitive dimension changes as well. “For the most part, social scientists are cast in the modest role of construing rather than ‘constructing’ the social world.” (Sayer, 2000:11)

Critical realism distinguishes between the world, which could exist independently, without humans, and our experiences of it. It offers a ‘stratified ontology’: a distinction between the real, the actual and the empirical (Bhaskar, 1975) – the overview of these strata is presented in Table 3.1. The real is whatever exists, be it natural or social, regardless of whether it is an empirical object for us and whether we have an optimal understanding of its nature. The real is the domain of objects, their structures and powers (physical or social). In the transitive dimension of science, we try to identify these structures and powers. Realist scientists seek to identify both a necessity and a possibility or potential in the world – which things must go together, and which things could happen, given the nature of the objects.

The actual refers to what happens if and when the powers embedded in objects are activated, what they do and what happens when they do.

The empirical is defined as the domain of experience, and it can refer to either the real or the actual, although it is contingent (neither necessary nor impossible) on whether we know the real or the actual. We may be able to observe things, i.e. structure of an organization, as well as what happens when they act, but some structures may not be observable. “Observability may make us more confident about what we think exists, but existence itself is not dependent on it.” (Sayer, 2000:12)

A critical implication of this ontology is the recognition of the possibility that powers may exist unexercised, and hence that what has happened or been known to have happened does not exhaust what could happen or have happened. The nature of the real objects present at a given time constrains and enables what can happen but does not pre-determine what will happen. (Sayer, 2000:12)

Table 3.1 ‘Stratified’ ontology of critical realism

	<i>Domain of Real</i>	<i>Domain of Actual</i>	<i>Domain of Empirical</i>
<i>Mechanisms</i>	x		
<i>Events</i>	x	x	
<i>Experiences</i>	x	x	x

(Bhaskar, 1997:41; table title added)

Critical realism argues that the world is characterized by emergence – the “situations in which the conjunction of two or more features or aspects gives rise to new phenomena, which have properties which are irreducible to those of their constituents, even though the latter are necessary for their existence.” (Sayer, 2000:12) In this way, social phenomena are emergent from biological phenomena, which are in turn emergent from the chemical and physical strata – but the social phenomena are not reducible to biology, chemistry or physics. In the social world, an individual’s roles and identities are often internally related, so that what one person or institution is or can do depends on their relations to others (Sayer, 2000). People are remarkably sensitive to their context, which specifically derives from our ability to interpret situations, rather than merely being passively shaped by them. Social phenomena rarely have the durability of the many objects studied in the natural sciences. Therefore, we cannot expect the descriptions in social sciences to remain stable or unproblematic across time and space.

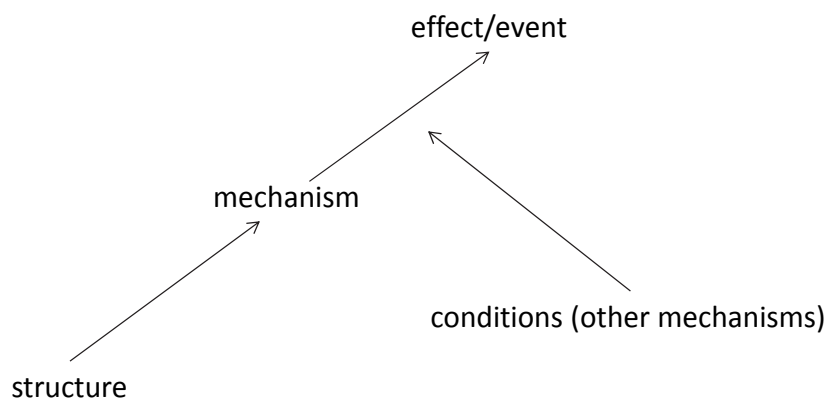
Critical realism argues that objects are, or are part of, structures. A structure suggests a set of internally related elements, whose causal powers, when combined, are emergent from those of their constituents. Whether powers are activated, depends on conditions, and when they are activated, the results depend again on other conditions. Furthermore, social processes are also typically dependent on actors’ interpretations of one another. Therefore, realists do not understand causation as a model of regular successions of events. Therefore, explanation need not dependent on finding them, as the positivistic

methods intend through gathering of data on regularities and repeated occurrences. As Sayer discusses (2000:14):

What causes something to happen has nothing to do with the number of times we have observed it happening. Explanation depends instead on identifying causal mechanisms and how they work, and discovering if they have been activated and under what conditions. (...) explaining why a certain mechanism exists involved discovering the nature of the structure or object which possesses that mechanism or power (...)

The realism view of causation is presented in Figure 3.1.

The social world consists of open systems, where the same causal power can produce different outcomes, according to how the conditions for closure are broken: e.g., economic competition can prompt firms to restructure and innovate or to close. And vice versa, sometimes different causal mechanisms can produce the same results – e.g., one can lose his or her job for a variety of reasons.



(Sayer, 2000:15)

Figure 3.1 Critical realist view of causation

The open social systems consist of many interacting structures and mechanisms. This creates the risk of attributing effects to some mechanism, while actually they are due to another. The problems of identifying casual responsibility in such systems in best dealt with by either studying examples, which provide contrasts in aetiology, i.e. the

absence of an otherwise common condition, or by asking a series of realist questions:

- What does the existence of this object/practice presuppose? What are its preconditions?
- Can/could object A exist without B?
- What is it about this object that enables it to do certain things?

Answering these questions allows sharpening our conceptualizations. Pursuing these questions about the conditions of existence of our objects of study is fundamental to theorizing in social science (Sayer, 2000; 1992).

### The Interpretive Dimension

Critical realism acknowledges that social phenomena are intrinsically meaningful: it is not only externally descriptive of them, but is also constitutive of them. Meaning has to be understood (as opposed to measured or counted), hence, there is always an interpretive or hermeneutic element in social sciences. While natural scientists necessarily have to enter the hermeneutic circle of their scientific community, social scientists also have to enter the hermeneutic circle of those whom they study. Hence, natural science operates in a single hermeneutic, while social science operates in a double hermeneutic.

These circles imply a two-way movement, a 'fusing of the horizons' of listener and speaker, researcher and researched, in which the latter's actions and texts never speak simply for themselves, and yet are not reducible to the researcher's interpretation of them either. (Sayer, 2000:17)

### 3.3 Choice of methodology: case study approach from the critical realist perspective

Critical realism endorses a wide range of research methods, while it does not support any ‘cookbook’ prescriptions of methods. The particular choices of method should depend on the nature of the object of study and what one wants to learn about it. Due to the complexity and openness of social systems, and the impossibility of isolating out the components of our interest and examining them under controlled conditions, we have to rely on abstraction and careful conceptualization. We need to abstract out the various components or influences in our heads and consider how they combine and interact. Only after that can we expect to return to the concrete, many-sided object and make sense of it (Sayer, 2000).

Research design needs to include thoughts as for our method of abstraction. Extensive research methods, i.e. quantitative surveys look for regularities in groups or their actions and seek to find quantitative relations among the variables. Extensive methods ignore or do not directly address the causal groups, in which individuals (persons or institutions) are actually involved. *Intensive research methods*, on the other hand, start with individuals (people or institutions) and trace the main causal relationships, into which they enter, and study their qualitative nature, as well as their number. While extensive research shows us mainly how extensive certain phenomena and patterns are in a population, intensive research is primarily concerned with what makes things happen in specific cases and thereby illuminates part-whole relationships (*ibid.*)

The research purpose guiding this dissertation is “to describe and explain the organisational factors and processes that serve as the sources of competitive advantage of technology-based born globals in the long term”. Considering the primarily explorative, explanatory and theory building objectives of this dissertation, an *intensive* methodology of a

*longitudinal process study* in a single case study design has been chosen in order to research various organizational capabilities of a technology born global venture. One of the articles contains a study of three embedded cases in the main case organization. This methodology has been chosen because it allows investigating the various elements of continuous organizational phenomena in their context, over time, as well as allows involving various interconnected levels of analysis. The process methodology allows considering both the internal organizational and external environmental influences on a phenomenon over time (Pettigrew, 1990).

Through the iterative reasoning process of conducting a literature review of various theoretical frameworks, simultaneously with carrying out my empirical work, I have arrived to the conclusion that the organizational capabilities perspective is the most suitable for studying the organisational factors and processes that enable competitive advantage of born globals. Organisational capabilities are complex systems of organizational processes, skills and structures, which can also be tacit to a large degree. Hence, it would be impossible to explore their elements through extensive research methods, i.e. a quantitative survey or purely by interviewing a number of organizational officials. The interplay and interdependency of these different elements is extremely important for creating organizational capabilities, as is their context. It is my firm belief that a study that aims to investigate specific organizational capabilities must involve significant amount of personal observation, and preferably – participant observation, in order to truly understand the organizational practices which are often very complex. In a technology-based venture, the complexity is even higher.

Easton (2010) argues that the case study methodology is ideal for applying the critical realist philosophy of science and ontology. It allows defining the boundaries of the phenomenon that we want to study (which can be re-defined in the course of research), conceptualizing it and then collecting the research data using the methods enabled by this methodology in order to trace the various

mechanisms that cause a specific event or a phenomenon to happen. According to Easton, the research question posed when following the case study methodology from the critical realist perspective must be in the order of *What caused the events associated with the phenomenon to occur?* In the case study, specifically this reasoning was followed: the case firm was able to survive and build a successful business over 11 years of its history, and was further growing. Through a comprehensive study of the organisation, I was trying to abstract and draw the causal mechanisms as for which organisational aspects have enabled this successful development.

Another widely cited author on case study methodology, Yin (2003) (although he does not follow a critical realist approach, his guidelines for case study methodology are widely followed in management studies), discusses that the case study methodology is suited best when a study is asking questions *How?* and *Why?* It provides the possibility of building rich knowledge where the learnings come not from variables separated from their context, as in the quantitative methods, but from the study of the interwoven aspects of the complex social reality, thus giving a close representation of it.

Case studies have the unparalleled advantage of being able to come very close to actual reality and develop rich and theoretically well-grounded constructs. According to Siggelkow (2007:22):

The ability to get closer to theoretical constructs is particularly important in the context of longitudinal research that tries to unravel the underlying dynamics of phenomena that play out over time. As scholars have increasingly begun to appreciate the role of dynamic processes (e.g., path dependency or evolutionary processes), rich longitudinal research is needed to provide the details of how these processes actually play out.

A related contextualist approach to research emphasized by Pettigrew (1990) means taking into account phenomena at the vertical and horizontal levels of analysis and making interconnections between these levels through time. The vertical level refers to the interdependences



between higher and lower levels of analysis, i.e. the impact of changing the socioeconomic context on specific events in an organization. The horizontal level refers to the sequential interconnectedness among phenomena in historical, present and future times. The third aspect of contextualist research is exploring context and action – how context is a product of action and vice versa. And finally, the central assumption of this type of research is that *causation of change is neither linear nor singular*, and that

the search for a simple and singular grand theory of change is unlikely to bear fruit. Explanations of causation are bound to be holistic and multifaceted. ... Look for continuity and change, patterns and idiosyncrasies, the actions of individuals and groups, the role of context and structures, and processes of structuring. (Pettigrew, 1990:269)

The context refers to the inner and outer environments of the organization. The outer context includes the economic, social, political and the narrow sectoral environment. The inner context refers to the features of structural, cultural and political environment inside the firm. The longitudinal process method gives the scope to reveal the multiple sources and loops of causation and connectivity, crucial in identifying and explaining patterns in the processes of change (*ibid.*).

In addressing the purpose of this dissertation “to describe and explain the organisational factors and processes that serve as the sources of competitive advantage of technology-based born globals in the long term”, discovering causation is central. The studies in this dissertation seek to discover and explain the mechanisms – specific elements of particular organizational capabilities (processes, structures, rules, individual and organizational knowledge and skills (Bingham et al, 2007; 2007a)), which enable competitive advantage of born globals in the long term. Also the continuous interplay of the mechanisms inside the organisations and the external environment (the different strata of analysis) are extremely important to the functioning of the capabilities. Hence, all of the typical questions of the case study methodology discussed above are relevant in this research. The interconnection

between the singular processes and the whole is inherent to organizational capabilities. They are complex systems, which interact with and are dependent on the rest of processes and capabilities of the organization. Furthermore, the organizational capabilities in focus of the study need to be able to address the external environment and interact with it, as they are believed to be the sources of the firms' long-term competitive advantage. Because an organizational capability develops over time, it is important to include the longitudinal element into the study in order to not only be able to take 'a snapshot' of a capability at a specific point of time, but to learn in time, which elements of the capability proved to be effective, and which did not. Therefore, a longitudinal process study in a case study design is the perfect choice for the purpose of this dissertation.

### Iterative reasoning

The most well-known and widely applied formal research approaches are induction and deduction. In an inductive approach, research starts with relatively unprejudiced observations of reality, where the researcher is not restricted by or bound to a specific theory. Step by step, the researcher develops categories and concepts from the data. Grounded theory is probably the best-known inductive research approach (Danermark *et al*, 2002). In contrast, the deductive approach begins from established theories. Through deduction, hypotheses are developed from these theories, which afterwards are tested on empirical data (*ibid.*)

However, in this dissertation *an iterative approach* has been found to be the most suitable. It is also the one most likely to be applied in a case study methodology (Easton, 2010). It consists of both deduction and induction cycles, and involves the researcher going back and forth between theory and empirical data, obtaining insights from both, and enriching both the empirical data collection and the theoretical development in the process (Dubois & Gadde, 2002). The deduction cycles help to identify the phenomenon of interest, suggest what

mechanisms may be at play and provide links with previous research and literature. While induction cycles allow event data to be explained and for the explanations to be tested. Finally, explanations invoke causal language and the identification of mechanisms and offer the data collected as evidence. The important approach in case study methodology is to continue asking the question *why?* (Easton, 2010).

The objective of this study was explorative and explanation and theory building. The study aimed to make a good use of the existing knowledge on INVs, SMEs and high-tech start-ups, as well as established general theory and apply it in investigating, categorising and conceptualizing specific capabilities of technology born globals by using the empirical data as the main information input. Hence, the iterative approach was preferred.

This is aligned with the literature on process and case studies, which calls for iterative thinking (Langley, 1999; Minzberg, 1979; Pettigrew, 1990; Eisenhardt, 2002; Dubois & Gadde, 2002). Langley (1999) discusses that “we should not have to be shy about mobilizing both inductive (data-driven) approaches and deductive (theory-driven) approaches iteratively or simultaneously as inspiration guides us” (p. 708) in theorizing from process data. There is room for not only building on existing constructs to develop new theory, but also for designing process research in a way that takes concepts from different theoretical traditions and adapts them to the data; or which takes ideas from the data and enriches existing theoretical perspectives further. Langley discusses three critical elements of theory building from process studies: induction, deduction, and inspiration – which is driven by creativity and design. Inspiration draws on formal data, experience, prior theory and common sense. “It works when it succeeds in creating new and plausible connections between all of these that can be made explicit as theoretical products, exposed to the scrutiny of others, and verified.” (*ibid.*)

Referring back to Sayer's (2000) discussion that it is easy to make causal misattributions considering the complexities of social systems and the possibility that different mechanisms can cause the same event, the iterative approach allows inducing a number of possible explanations, compare them to the data and choose the one that suits the data best (Easton, 2010).

From a critical realist perspective, expansion and generalisation come from identifying the deep processes at work under contingent conditions via particular mechanisms. A causal explanation in a single case must be based upon a theory structured in terms of what comprises a critical realist causal explanation. The best explanation, that is the one most consistent with the data, is what is being sought. (Easton, 2010:126)

### 3.4 Research design

In order to grasp the richness and versatility of organizational factors and activities that comprise each individual organizational capability of a technology born global and to provide the necessary depth to the investigation, a single-case study design has been chosen. Besides, one of the articles employs a single-case design with three embedded cases. This choice is in-line with reasoning of Dubois and Gadde (2002) who argue that the most significant choice is not in the number of cases, but in the unit of analysis. If the research problem is focused on comparing a few specific variables, it is a natural choice to increase the number of observations. However, if the objective is to analyze a number of interdependent variables in complex structures, as in this study, the natural choice is to go deeper into one case, instead of increasing the number of cases.

The literature (Yin, 2003; Siggelkow, 2007) calls for a case study to be significant, for it to add new and possibly unexpected knowledge to a domain. To this end, the case organization represents a typical, but a significant case of a successful technology born global. It was founded in 1999 and has managed to become a leading player in developing

amplification technologies. The firm has managed to overcome a change of management, a financial crisis and a subsequent recession. Concerning the grounds for conducting a potentially valuable single-case study, Yin (2003) discussed: 1) using a critical case to test a well-formulated theory; 2) exploring an extreme or unique case; 3) using a representative or a typical case in order to capture the circumstances and conditions of an everyday or a commonplace situation for the people or organizations; 4) having a revelatory case where the researcher has an opportunity to study a phenomenon that was previously inaccessible to scientific investigation; 5) doing a longitudinal case study - studying the same case at two or more points in time.

This case study has been suitable for a single case study for more than one reason. First of all, it is a revelatory case because, as discussed throughout the dissertation, there are not many (or to my knowledge, none) longitudinal process studies of born globals, which study the firms' unique and specific capabilities *from the inside* and allow to empirically conceptualize their aspects and study their development and evolution over time. Longitudinal development of a firm's capabilities is critical if the research objective is to learn how effective specific elements of a capability are.

The chosen firm is also a critical case. A lot of literature exists on the specific functional capabilities that are being investigated in this study: the fields of alliance management, brand management, R&D management and general management have long traditions and a lot of useful theory. However, it was important to test this theory in application to this new and different type of firms in order to see, which aspects of the extant theory apply to them, which do not, and which new findings could be added from this research. Finally, in some aspects of its operations, specifically in its brand building practices, the case company has been a unique case: I have not found examples of similar brand building in the literature at the time of writing the article, and the findings clearly bring new insights to the branding literature.

### 3.5 Defining the focus capabilities for the study

The two central processes in a critical realist analysis are abduction and retroduction. Abduction is “an inference where redescription or recontextualization is the central element. By means of abduction we recontextualize and reinterpret something as something else, understanding it within the frame of a totally different context. In this way we introduce new ideas of how individual phenomena are part of the structure and internal relations.” (Danermark *et al*, 2002, p. 96) (Some studies (i.e. Dubois & Gadde, 2002 refer to ‘abduction’ in describing the iterative approach as has been discussed above. However, this is not the meaning given to abduction by the critical realist authors (Sayer, 1992; Danermark *et al*, 2002)).

Another vital element is retroduction, which is “a mode of inference, by which we try to arrive at what is basically characteristic and constitutive of these structures.” (*ibid.*) The core of retroduction is transcendental argumentation, where one seeks to clarify the basic prerequisites or conditions for social relationships, people’s actions, reasoning and knowledge. Conditions are the circumstances, without which something cannot exist. In such argumentation, a researcher tries to separate the necessary conditions from contingent circumstances. The fundamental question in the process of retroduction is “*What properties must exist for X to exist and to be what X is?*” (Danermark *et al*, 2002:97).

The literature review has enabled me to approach the study through the lens of the abductive process. Through studying the various theoretical perspectives taken by various authors and by simultaneously carrying out my empirical study and continuously comparing them, I was able to conclude that the best way to address the research purpose is through viewing the firm’s activities as a set of organisational capabilities. Through the retroduction process, I was able to single out the specific capabilities that are critical for a technology born global’s operations and competitive advantage in the long term, and without which such

firm could not survive. The discussion of how each of the capabilities has been arrived at is presented below.

### 3.5.1 R&D-related capabilities

R&D activities are the very core and the key competitive capability of technology-based born globals. This is what comprises the basis of their business. Running an effective R&D which enables a firm to develop innovative, timely, and competitively priced products, and doing this continuously in the conditions of limited resources is a significant challenge. However, R&D and innovation capabilities or activities of international SMEs have hardly been addressed in the literature (Gassmann and Keupp, 2007). And vice versa, the R&D literature fails to consider born globals (*ibid.*), while the literature on R&D in SMEs is rather limited. The existing literature does acknowledge that innovation and technological capabilities are critical factors in a born global's international competitive advantage. E.g., Knight & Cavusgil (2004) discuss that global technological competence is one of the strategies used by born globals to achieve competitive advantage in international markets. According to Knight & Kim (2009), international innovativeness is one of the composite factors of the international business competence, which engenders of born globals. However, the only contribution directly addressing R&D / innovation / technological capabilities of born globals that I have been able to find is that of Gassmann and Keupp (2007a) in exploring internationalization of R&D in such ventures. The rest of the aspects of born globals' R&D and innovation capabilities remain, to my best knowledge, unaddressed.

Meanwhile, a technology born global needs to be able to produce innovative products and keep the firm continuously competitive – as differentiation is typically the only viable strategy for small ventures (Moen, 2002). This needs to be done in the context of limited resources, faced with competition from firms of various sizes, while operating in numerous markets across the world. Thus, it was clear that

the R&D-related capabilities were a necessary aspect to be researched if we are to understand and give advice to practitioners on improving the internal processes that engender competitive advantage of technology born globals in the long term.

In the case company, I observed how breakthrough technologies can help a company to relatively quickly establish itself and become known and respected in the international markets. However, as the time goes by, competitors – mostly much larger firms with greater resource availability, large knowledge banks and R&D departments, catch up with the young firm on its knowledge; and the born global has to compete in the conditions of large differences in resource availability. Besides, if the born global chooses to operate in several markets with different types of products, it needs various types of engineering skills, which translates into more engineers and more financial resources. The case firm, after a partial change in ownership and management, which coincided with the financial crisis of 2008, undertook a number of restructuring steps in its technology and R&D strategies and processes. Thus, there was a fertile ground for studying the R&D capability, its effective and not very effective elements, as proven by time, and attempt to conceptualize the key aspects of the capability specifically for technology-based born globals.

### 3.5.2 Alliance capability

A born global's alliances are closely related to its R&D capabilities. Due to their very limited resources (a firm at the beginning normally consists of only a handful of engineers and the founding entrepreneur), born globals actively look for larger partners who would help them to compensate for the lacking R&D, manufacturing, distribution and marketing resources. R&D and marketing alliances are a key strategy for many born globals in product development and internationalization of marketing and sales (Mort & Weerawardena, 2006; Freeman *et al*, 2006). Although the literature on alliance management is abundant (e.g., Doz and Hamel, 1998; Ireland *et al*, 2002; Kale *et al*, 2002; Kale



& Singh, 2007; Grant & Baden-Fuller, 2004), it does not reflect the realities of born globals. It overwhelmingly focuses on collaborations between two or more large organizations; while in the born global context, they most often collaborate with an MNE. A number of issues arise in such alliances: an imbalance of power, a dependency of the SME on the MNE on development and production resources and market access, a disclosure of the proprietary technologies by the born global – which are its reason for existence, to a partner that has a lot more leverage, differences in the resources committed from each side, and low transparency of the MNE to the born global are among them.

Technology alliances are especially complex, as they involve very close collaboration between two organizations that are very different in size and probably in business culture. In case of born globals, these collaborations sometimes happen across the globe, thus adding great differences in working and business cultures and engineering education between the partners to the complexity. Because many born globals might lack the expertise and the resources to bring their products to a finished state, or to enter desired markets without the help of a larger partner, the ability to effectively manage alliances and get the desired results from them is very important to the existence and competitive advantage of born globals. It is one of their competitive capabilities that have long-term consequences for the organizations. Therefore, I saw that it was important to include the alliance capability into this study.

Meanwhile, what I was observing at the case company was reflecting the discussion in the literature. Strategic R&D alliances with MNE partners was the key strategy that the case firm pursued from its earliest days, as it aimed at semiconductor application markets for its products. Semiconductor development is a very resource-intensive and expensive process, which the firm did not have the funds for. Therefore, it strategically entered into a number of long-term alliances with the purpose of new product development and market access; and has managed to develop several very competitive products and gain access to several electronics mass markets. On the other hand, not all of the

alliances it entered into finished with a positive result. Thus, there was a fertile ground for conducting comparative studies of several R&D alliances where it was possible to draw conclusions from both positive and negative experiences of the organization.

### 3.5.3 Branding capability

Marketing of a born global's products is a critical aspect in the firm's operations. Numerous studies have looked into the aspects of marketing strategies and activities of such ventures (Knight *et al*, 2004; Gabrielsson & Gabrielsson, 2003; Gabrielsson & Kirpalani, 2004) and have, to a large degree, explored the subject. However, the important aspect of brand building has not been studied extensively in the international entrepreneurship literature, besides the study of branding strategies by Gabrielsson (2005). Many born globals operate in B2B markets, which suffer from the pressures of commoditization, while the complexity of products and the amount of component products and technologies increases. Thus, investing into a distinct brand would add value to an industrial product, serve as a quality guarantee and increase the firm's potential to attract customers and earn their loyalty (Kapferer, 2008; Kotler and Pfoertsch, 2006). Volumes of academic literature (Keller, 2008; Kapferer, 2008; Kotler & Keller, 2006) carry a number of highly persuasive arguments why brand is an important variable in a competitive equation of firms of all sizes. Born globals, however, as any SME, are characterized by very limited managerial and financial resources, and hiring dedicated brand specialists and investing into brand communication campaigns is not a priority for them. Especially in the firm's early days, when all of the firm's employees focus on the day-to-day activities related mostly to the establishment and survival of the organization. Hence, the issue of branding capabilities of born globals definitely deserves academic investigation.

Meanwhile, in the empirical work, I was observing a rather unique case in relation to what is discussed above. The founder of the case firm had a very strong vision of the firm and its brand, inseparable from each

other, from the very beginning. He also had a strategy for implementing both. The firm has taken a unique approach of building the brand through technological excellence and building a solid reputation for its products and engineering abilities in B2B markets. Afterwards, it embarked upon building a component B2C brand through the customers' products. Eventually, the brand began paying back – bringing new customers and even direct financial revenue from co-branding. These observations have shown the viability of building an international brand for a born global with very limited resources, have reinforced the importance of understanding the branding capability for such ventures, and thus have prompted me to research it in detail.

One could argue that the branding capability a technology-based firm could do without. However, my conceptualization of the capability differs from the more 'general' understanding of the word 'branding', which often evokes images of flashy advertising campaigns and memorable brand characters. As discussed in the article, I conceptualize the branding capability as mainly a coherent communication of the firm, its products and their advantages by the born global to its customers and the wider audience, building on the firm's technological excellence; and doing so from the firm's earliest days. Such communication a technology-based firm can hardly do without in today's international markets characterised by dense competition.

#### **3.5.4 Managerial capability**

Finally, a firm's ability to sustain its operations and competitive advantage over time depends on its dynamic capabilities – the abilities to incorporate environmental, as well as internal organizational changes into the firm's strategies and activities and renew its operational capabilities (Teece *et al*, 1997; Winter, 2003). The dynamic capabilities perspective gives the centre role to the organizational leaders in building and implementing dynamic capabilities in a firm (Zahra *et al*, 2006; Teece, 2007; Weerawardena *et al*, 2007). Thus, a meta-level managerial

capability of an organization can be expected to have a high potential to ensure the firm's competitive advantage in the long run. Hence, I have included investigation of this capability into the dissertation. The dynamic aspect of the capability comes from the fact that an effective managerial capability needs to be able to incorporate external environmental and internal organizational change into the firm's strategies and processes and coordinate and renew the firm's operational capabilities.

My research project coincided with a very important period in the world's economic history – the 2008 international financial crisis and the subsequent economic recession. Such times truly test the sustainability and solidness of companies, their business models, operational structures, capabilities and their ability to change and adjust. Such times put particular pressure on the young and resource-poor companies, which most often do not have excess funds to fall back onto, and some of them do not survive such conditions. I have been able to observe the adaptation and changes in the case organisation following the turbulent economic times, a change of ownership and a subsequent change of strategy, decision rules and processes inside the organization. This has given me a unique combination of historical conditions to study the managerial capability of the firm over time and try to find out, which aspects make it effective.

### **3.6 Presentation of the case company: Bang & Olufsen ICEpower a/s**

ICEpower is a Danish high-technology born global established in 1999. The firm was founded based on the technological findings in Class D audio amplification developed by Dr. Karsten Nielsen in his PhD thesis. This research was conducted in collaboration between the Danish Technical University (DTU) and Bang & Olufsen (B&O), a Danish manufacturer of premium consumer electronics. After his defence, Dr. Nielsen was hired to implement the technologies into

B&O's products, but soon realized a significantly bigger potential for his technologies. He convinced B&O to spin the division off into a separate company, which would act independently of B&O and would cater to markets different from those of the mother company. Thus, in 1999, Bang & Olufsen and Dr. Nielsen founded an independent company, Bang & Olufsen PowerHouse a/s (later renamed into Bang & Olufsen ICEpower a/s), with the majority stake of B&O and a minority stake of Dr. Nielsen. The firm became an independent subsidiary in the B&O Group.

One year after its founding, the firm was moved to Kgs. Lyngby in the Greater Copenhagen area – away from Bang & Olufsen's headquarters in the remote town of Struer in Jutland, Denmark. This was done in order to be closer to the international business scene in Copenhagen and to the Danish Technical University (DTU) – the leading technical university in Denmark. The DTU was a source of talented young engineers and students for ICEpower. The firm was established and organized as an innovation house specializing in Class D amplification technologies applied in industrial (B2B) solutions for various audio and electronics products.

Although the principles of Class D technologies had been known for decades, their design and integration characteristics have not been developed to the level that could deliver high audio performance. It is only in the 1990s that the semiconductor and digital technologies were developed to enable enhancement of Class D technologies. In his thesis, Dr. Nielsen managed to raise audio performance characteristics of Class D audio amplification (more precisely, audio power conversion) technologies to a significantly higher level than had been possible previously. ICEpower was one of the pioneers in developing the technologies and the solutions, audio performance of which was accepted by Hi Fi manufacturers and audiophiles; and which therefore could be introduced into a wide range of audio applications. Thus, ICEpower effectively was one of the small number of firms that began the audio and electronics industries' shift from the traditional Class

A/AB (analogue) technologies to the significantly more energy efficient and environmentally friendly Class D technologies.

ICEpower audio amplification solutions based on Class D technologies carry the following benefits over traditional Class A/AB technologies:

- audio performance on the level with or better than Class A/AB amplifiers
- significantly higher energy efficiency
- audio products made much smaller and lighter due to elimination of external heat sinks
- higher integration of components on a PCB (printed circuit board)
- as a result, significantly decreased manufacturing costs
- due to the possibility of designing smaller products, more audio channels can be integrated into a single solution or audio product. This results in more design freedom for consumer product manufacturers and hence, more attractive and even completely new and unique consumer products. Examples of such products are devices that integrate various types of multimedia, i.e. TouchDiva music streaming audio system developed in Denmark
- the high energy efficiency and smaller product size lead to significantly lower energy consumption and 'greener' audio products

From the firm's very inception, the founder Dr. Nielsen had a very large vision for the firm: developing a new standard of audio, alike to "Intel inside". The long-term goal was for ICEpower technology to become the standard of high-quality audio reproduction and high energy efficiency in any device that generates sound. He expressed this vision openly and frequently. Dr. Nielsen was also a highly entrepreneurial individual and had a strategy of developing his firm into the world's standard of audio. As he put it:

We had a fairly clear vision. We had the technology platform - I knew it was strong. I had been talking to potential customers during my PhD.... The question is: “Why not?” [referring to his vision of ICEpower becoming the standard ingredient for all audio products] Just give me one reason why not, if correctly executed. (Dr. Nielsen, interview, 26.08.2009)

... It's having the best technology platform for reproduction. ... If ICEpower is that, the technology and products will spread quickly. (Dr. Nielsen, interview, 26.08.2009)

(an extract from Article 1 in this dissertation).

B&O provided help in ICEpower's first years: space for the venture for the first year, and access to B&O's administrative systems – human resources, IT systems and support, financial and legal functions, for long-term use for regular fair fees. B&O also helped ICEpower with developing the first line of its products: developing a technology into a manufacturable product that meets all the international standards requires a lot of professional expertise and experience. The first edition of these products turned out to be unsellable, however, due to the design features implemented following B&O's high-design approach, which made ICEpower's B2B products too expensive. The second, simpler edition of the product line was competitively priced. The first product line was also manufactured at B&O's manufacturing facilities in Denmark.

However, already on the third year of ICEpower's history, a number of experienced engineers were hired into the firm, including a very experienced Director of Product Development. The engineers together had the expertise in product development and manufacturing that made ICEpower's operations possible without the support of B&O. Production was also soon moved to a manufacturing partner in Asia.

Products of the mother and the daughter venture were completely different (although ICEpower products could be used as components in B&O products). They targeted different markets – ICEpower targeted

B2B markets of electronics and audio manufacturers, while B&O targeted the consumer audience of Hi Fi and design aficionados. In fact, while the name B&O in ICEpower's company name created initial legitimacy in the eyes of potential customers, in some situations, it also created the connotations of above-premium prices, which is a negative aspect in B2B markets. Furthermore, some of ICEpower's potential customers were B&O's direct competitors, which created a conflict of interest. Therefore, the founder tried to build the firm and the brand as independently from the mother venture, as B&O's high ownership stake allowed.

When ICEpower was founded, a Board of Directors was appointed consisting mostly of B&O senior executives. The board served mostly as a financial / strategic control function. As long as ICEpower was able to justify its strategies and expenses, and later, when it became profitable, it was free to manage its strategy and operations independently. From ICEpower's earliest days, the firm had a CEO appointed by the Board to help the founder to develop and run the firm. The CEOs, however, held their positions at ICEpower only part-time and were also responsible for large-scale projects at the mother firm. Such solution was not working well, and the careers of most CEOs were short-lived. That was until 2005, when the Board finally appointed a full-time CEO to manage ICEpower's diversification and growth. This was the firm's current CEO.

ICEpower's management understood early on that processes of a technology start-up differed significantly from those of an established premium electronics manufacturer with a 90-year-old history like B&O. While access to B&O's administrative systems were a great help to ICEpower at the beginning, eventually, they started limiting the firm in its HR practices. The speed of obtaining some of the other services, i.e. legal, was not optimal for a highly dynamic young venture. Eventually, some of these systems became a significant limiting factor for the born global. Yet, B&O was not willing to relinquish its control of these functions, in part due to resource optimisation in the Group.



The founder, together with his early team engaged in advanced market research and planning for his company's new projects. The firm's strategies, as well as its daily operations, pricing practices, etc., were grounded in substantial calculations and planning.

Due to the high energy efficiency of ICEpower's technologies, the firm's first products were B2B amplifiers designed with very high power output levels of 250W, 500W and 1000W. They were aimed mostly at professional and consumer audio manufacturers. The next series of products were the first integrated solutions consisting of the amplifiers combined with switch-mode power supplies. Integrated Plug&Play solutions, convenient in implementation by B2B customers, became ICEpower's hallmark.

Simultaneously, ICEpower was working on other application areas for its technologies. In its early days, the firm worked like an innovation laboratory, with engineers and students working side-by-side on various technological developments. The R&D processes were not very formal, and their direction changed rather often. The founder and some of the engineers travelled often to international trade fairs and Audio Engineering Society conferences to present ICEpower's first products, and paid numerous visits to potential customers around the world. Due to the novelty and outstanding characteristics of ICEpower's products, the firm began building a name for itself in its markets of interest. Dr. Nielsen possessed notable sales and marketing abilities. Besides the presentation skills, superior knowledge of technology and a convinced belief in his technologies and products, together with his team, he created business proposals for the potentially large customers. A frequently applied product/ technology presentation technique was to take a customer's product and replace its existing audio core with one made by ICEpower and let the customer hear the difference. This technique had won ICEpower numerous contracts.

One of the strategies of the founding team was to partner up with large MNEs, which would support ICEpower with engineering,

manufacturing and distribution resources and help the firm to enter specific application markets. ICEpower managed to get several partnerships with large semiconductor MNEs, which enabled the firm to develop its technologies into ICs (chips) and led to establishment of the IC development department. Another such collaboration, with Pioneer Electronics, led ICEpower into the home theatre market.

ICEpower also entered the automotive market due to the market pull caused by the high energy efficiency very much needed in automotive design. After ca. seven years, operations in this field were changed to being exclusive for B&O, where the two companies together develop premium Hi Fi audio systems for automotive manufacturers, i.e. Audi and Aston Martin.

In 2011, ICEpower operated in three markets: consumer and professional audio, home theatre and portable/mobile audio. It carried four series of products in the consumer and professional audio, with the power output ranging from 50W to 1000W; and one product each in the portable and home theatre sectors. The firm also offers development of customized products for large orders and technology licensing for industry partners.

The largest markets of the firm are consumer and professional audio and video applications. The firm has managed to build a strong name and a brand for itself in all of its markets, but particularly in the consumer and professional audio. ICEpower is often used as the reference brand of Class D amplification technologies. The firm is also slowly building a component B2C brand, being promoted as a vital component in its customers' end products. E.g., ICEpower logo is on ASUS laptop computers and Pioneer's Elite home theatre systems.

The international markets have certainly changed since 1999. Back then, ICEpower was one of the pioneers of this disruptive technological change in the audio industry. Today, many companies have caught up and develop their own Class D technologies and products. Many of them are MNEs, particularly in the chip-based applications: e.g., Texas

Instruments, National Semiconductor, Philips. Over the years, ICEpower had to adapt and change its R&D and market strategies, its processes and organization, and survive the global economic crisis and recession. There was a change of ownership in 2008 when the founder left the company, and a subsequent partial change of management. These changes coincided with the international economic recession. Although affected by the recession, ICEpower has survived and came out as a stable and a profitable firm. In financial year 2009/2010, ICEpower showed the net turnover of ca. 80 mln. Danish kronor, and the net income of ca. 12,5 mln. Danish kronor. The firm has significantly changed from its early, creative engineering lab days and has become a more focused and lean organization (as discussed in articles 1 and 4). The firm's key financial figures over 2005-2010 are presented in Table 3.2.

ICEpower today is still a small firm of ca. 35 people. It has headquarters in Kgs. Lyngby, Denmark, and operates two small regional offices in Chicago, US, and Tokyo, Japan. It has manufacturing and distribution partners in East Asia. ICEpower's major geographic markets are the US, Japan, Korea and Western Europe – the locations of its B2B customers.

### A true born global

Bang & Olufsen ICEpower is a born global venture by all definitions presented in the Theory chapter. To return to my definition presented in section 2.1.1, which is based on a number of accepted definitions in the literature (Knight & Cavusgil 2004; Oviatt & McDougall 1994; Gabrielsson & Kirpalani 2004; Di Gregorio *et al* 2008; Kuivalainen *et al* 2007): a born global is

a business organization that has achieved international operations within a few years after its establishment through the application of knowledge-based resources to the sale of outputs in and the combination of input resources from multiple countries, including those located beyond the firm's domestic continent.

ICEpower's founder and the founding team aimed at the international markets from the very establishment. The nature of the products the firm aimed to develop and produce meant that they would need to be applicable globally, since the B2B electronics and audio markets are characterised by international value chains that stretch across the world. Furthermore, the founder had *a global vision* for the firm and the brand from the very start. Resource commitments were made to develop and manufacture internationally marketable products, which meet international standards and customer requirements (with various options of mains voltage and other specifications). International marketing of products began from the firm's establishment: at international trade fairs, scientific conferences and directly to customers in Asia and the US. The founder knew from the start that the key potential customers were overseas. The first international customer beyond the home continent – Japanese Sony - was obtained 2 years after the firm's establishment.

Besides marketing its products and technology to different countries and continents, ICEpower also involved international resource input combinations. Already three years after its establishment the firm entered into its first strategic alliance with a Japanese MNE to develop its first chip-based product (as discussed in article 2). One year later, it entered into its second major alliance with a Korean MNE. Hence, resources of external partners from another continent were attracted to develop and manufacture ICEpower's products.

In spite of ICEpower being a spin-off of an established company, it developed, in large part, as an independent venture. The firm had to work out its own profitable business models for the technology and gear up its internal resources and organization to implement them. As discussed, ICEpower's products are qualitatively different from those of B&O: they are component products aimed at various B2B markets, as opposed to B&O's high-end consumer products. The technological content of the products and the business models used to commercialize them are completely different from B&O's, and in some situations, the

reference to B&O negatively affected price perception of ICEpower by customers.

Although B&O did provide initial help with facilities and product development, and ICEpower is still connected to B&O's administrative functions, already on the 2-3<sup>rd</sup> year of its operations, ICEpower hired its own highly experienced engineers to oversee product development and manufacturing. Since then, the firm was no longer reliant on B&O's engineering support. As for support with the administrative functions, such facilities could have also been obtained at favourable prices at other special facilities for start-ups, i.e. innovation incubators provided by universities. First and foremost, B&O was a major investor into ICEpower, and as any investor, it wanted to make sure that the money it was investing was being spent wisely. This was the reason for establishing a Board of Directors and appointing a CEO into the firm. It must be noted that establishing any high-technology venture that deals with developing and manufacturing physical products requires large investments over a period of time. The founding entrepreneur(s) would most probably try to obtain it from a professional investment body (it is difficult to imagine that family's and friends' funds would suffice). Thus, any such type of venture would have professional investors and would have a supervisory board, which it would have to report to.

Due to the strong engineering knowledge and business skills of the founder and the quick acquisition of a professional team, ICEpower for the largest part developed independently and in its own direction. Besides everything else, the founder had a very strong and independent personality and had very large ambitions for his venture. He managed the firm as independently as it was possible, considering the large ownership stake of B&O.

As will also be discussed in article 4, ICEpower's Board of Directors served as mostly a financial control body. As long as ICEpower was performing well financially and could reasonably defend the next

investment it was requesting, the Board did not blend itself into ICEpower's operations. Besides, ICEpower constitutes a very small percentage of B&O's turnover, so it does not necessarily make business sense for B&O's management to spend a lot of time steering ICEpower's business.

While the B&O name provided initial legitimacy to the firm and opened some doors, ICEpower had to prove the legitimacy, quality and superiority of its products on its own, through their technological advantages and competitive pricing. ICEpower's innovative technologies and high-quality products have made it a name and a brand in the related B2B markets and among audio aficionados, making it *the reference brand* for Class D amplification in some audio markets. Eventually, the firm was able to promote its brand to end consumers through collaborations with large electronics manufacturers. In the most recent years, it was able to start receiving revenues for the use of 'ICEpower' brand on some mass consumer products – showing evidence of brand equity of ICEpower, and not necessarily of Bang & Olufsen ICEpower.

Therefore, it is reasonable to establish that ICEpower developed as an independent born global venture, having to deal with both the benefits and the limiting factors that its mother firm provided, while building its own operations, choosing its markets, developing innovative products and an independent brand.

I do need to stress that while this study does touch upon the early years of the case firm's development, the main focus is on the later stages and the capabilities that have made the firm competitive *in the long term*. This is why, in spite of the early support of the mother venture, ICEpower is a valid case company for the purpose of this research: after the first 2-3 years, the firm has been running as independently, as any technology-based SME would be.

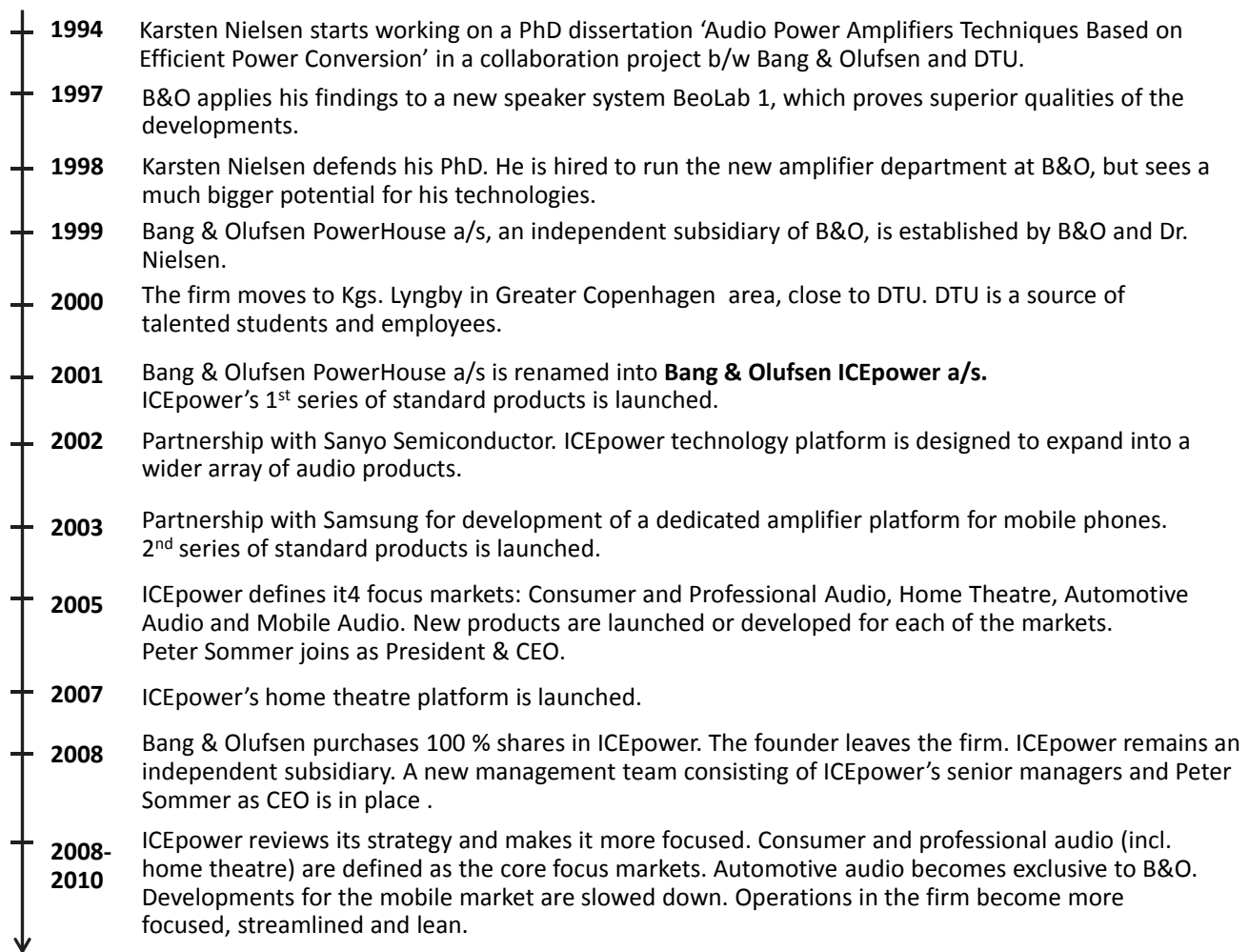


Figure 3.2 History of Bang & Olufsen ICEpower a/s

Table 3.2 Bang & Olufsen ICEpower a/s: Five-year summary, Selected Main and Key Figures

(1000 DKK)	2005/06	2006/07	2007/08	2008/09	2009/10
<b>Profit and loss account</b>					
Net turnover	100,447	116,678	117,879	85,024	79,931
Operating profit/loss	27,134	39,896	27,350	11,548	11,356
Financial items, net	2,619	(834)	(2,810)	(1,259)	5,355
Result before tax	29,753	39,062	24,540	10,172	16,711
Result for the year	20,317	29,211	24,033	7,511	12,530
<b>Balance sheet</b>					
Total assets, end of year	63,098	90,122	84,041	91,017	71,920
Share capital	1,940	1,940	1,940	1,940	1,940
Equity, end of year	40,913	60,124	69,157	76,668	59,198
Year's investment into tangible assets	1,389	1,537	1,356	1,460	1,069
<b>Key figures</b>					
Profit ratio, %	27	34	23	14	14
Return on assets, %	63	62	37	14	14
Return on invested capital, excl. goodwill, %	944	189	75	38	46
Return on equity, %	66	58	37	10	18
Current ratio	1.8	1.9	3.5	4.3	3.6
Equity ratio, %	65	67	82	84	82
Financial gearing	(0.5)	(0.2)	(0.3)	(0.4)	(0.5)
Net turnover / Invested capital excl. goodwill	32.2	5.1	3.1	2.1	2.4

Source: Bang & Olufsen ICEpower a/s

Translation from Danish is done in accordance with Bang & Olufsen's yearly reports, available at <http://www.bang-olufsen.com/investors/annual-reports>.

### 3.7 Data collection methods

The objective of a process study is to collect data that is processual (an emphasis on action and structure over time), comparative, pluralist, historical and contextual (Pettigrew, 1990). This means producing case studies that go beyond historic accounts to develop analytical themes. It also means collecting data on different levels of analysis. This is why the



triangulation method offered by the case study / process methodology is so valuable in enabling the researcher to draw on the different strengths of the various data collection methods (Pettigrew, 1990; Yin, 2003).

Due to my internal position in the case organization, I became very well acquainted with the firm's products, markets and customers – I wrote the texts and press-releases for ICEpower's website and wrote and produced the corporate and product brochures. Through this process, I studied a large amount of the firm's literature and the related information on the web, i.e. forums, and the literature on ICEpower's customers. I was also in charge of developing the firm's current website [www.icepower.dk](http://www.icepower.dk) and the customer intranet. Together with a group of ICEpower managers, I visited Cedia Expo 2007 – the international electronics trade fair in Denver, to participate in meetings with customers, which helped me to understand the nature of ICEpower's marketing, sales and market scanning processes. First-hand participation in all these activities allowed me to become well acquainted with the company's complex technological products, markets, product applications and to communicate (to a limited degree) with its customers and competitors.

The source of the 'formal' data collection methods was regular participant observations at the case firm. I worked on company premises 20 – 70 percent of the working week in the period from August 2007 to July 2010, with the amount of time spent at the firm's premises decreasing as my PhD project progressed. Through this setup, I had the possibility to observe most aspects of the firm's operations. The insider position in marketing communications allowed me virtually unlimited access to the firm's employees and its Danish operations (I did not visit the firm's overseas offices or its partners' manufacturing and distribution facilities). The observations were significantly enhanced and completed by the numerous informal conversations I had with the firm's specialists, managers and top managers about the ongoing developments in the firm. I systematically took notes of my observations about the managers' actions, the

developments and new projects, the way certain operations were being run, and about the general atmosphere in the organization. As at the time I did not speak Danish, all of the firm's employees, without exception, were kind enough to switch to English for me both in our formal and informal discussions. I often initiated the informal discussions 'in the kitchen' or during lunch hours in order to obtain a better understanding of what was going on in the organization, which specific projects the people were working on, the firm's relations with its external partners, or their perception of specific events. The internal status and my professional curiosity have allowed me to be truly in the centre of events and follow most of the firm's developments.

The second major data collection method was focused semi-structured interviews with the firm's specialists, managers and executives, which I conducted in order to research individual capabilities or issues deeper. The interviews allowed zooming in onto the specific issues, adding recollections of past events related to the capability under study, and collect the accounts of different specialists and managers. In the cases where the issues were sensitive (i.e. in the articles on the alliance capability, R&D-related capabilities and the managerial capability), I did not disclose the company names. The interviews lasted 1-2 hours each. They were carried out in English, recorded on a dictaphone and subsequently transcribed in full by me. The personal transcription allowed for an even closer acquaintance with the issues and their accounts and provided for easier analysis of the data.

Interviewee selection was done based on theoretical sampling (Bryman & Bell, 2003): the small size of the firm (30-35 people) permitted me to gradually become acquainted with all of its employees, including those that worked in different locations, during their visits, as well as with some of the firm's part-time consultants. Therefore, through asking questions and learning about the firm's operations over time, I was able to locate the people central to each individual process or capability that I was exploring. In order to mitigate possible bias of the interviewees, as well as to get a richer and a multi-aspect picture of

events, I involved people of different levels in the organizations (Eisenhardt & Graebner, 2007): from the CEO, the CTO and the Founder, to R&D project managers, to engineering and marketing and sales specialists. Furthermore, I have combined retrospective stories of past events with the longitudinal studies of current events, in order to mitigate retrospective sense making and impression management by the interviewees (*ibid.*). 20 interviews were conducted with 11 firm employees in total. Overview of the interviews is presented in Table 3.3.

Of the former employees of the firm, I interviewed the founder about a year after he had left the organization; although I had worked with him as my direct supervisor for about 1.5 years before that and was able to make observations. He was obviously an absolute key player and I needed to have an 'official' and focused account of specific events from him. Otherwise, I do not believe that interviewing other former employees would have made a significant impact on the results. There were a number of employees in the organization who had been with the firm since ca. 2000-2001, so nearly through its entire history, and I have collected their accounts of the firm's early years.

When conducting the research, I have adhered to the ethical principles outlined in the literature (Spradley, 1980; Pettigrew, 1990). I always communicated the objective of my research to all the people I worked with, and whenever I started an interview, I explained its purpose precisely. None of the informants requested for their names to be undisclosed, so I showed them in some cases. Finally, I made the interview transcripts available to any of the interviewees that requested them, and took their corrections if they felt that some of the things they had disclosed had been sensitive. In some of the transcripts, minor corrections were made.

Overall, I had an impression that most of the people rather enjoyed being interviewed, and were quite open in their answers, having known

me personally for several years (I started doing the first interviews approximately 1.5 years after I had begun working at the company).

Table 3.3 Formal interviews conducted for the study

	Interviewee	Dates	Total no. of interviews
1	CEO	16.05.2011 17.12.2010 22.07.2010 26.03.2010 19.08.2009 4.11.2008	6
2	Founder	26.08.2009	1
3	CTO	16.12.2010 10.03.2010	2
4	Senior R&D Manager 1	09.07.2009 11.12.2008	2
5	Senior R&D Manager 2	03.03.2010	1
6	Technology marketing manager	15.07.2010 07.11.2008	2
7	R&D Engineer	02.03.2010	1
8	R&D Project Manager 1	20.12.2010 04.02.2009	2
9	R&D Project Manager 2	04.11.2008	1
10	Business development manager North America	12.11.2008	1
11	Business dev-t manager Japan	12.11.2008	1
	Follow-up discussions		
	Total		20

### 3.8 Data analysis

The iterative analytical approach has been applied in this study (Easton, 2010; Langley, 1999; Pettigrew, 1990; Dubois & Gadde, 2002), where the researcher goes back and forth between theory and empirical reality throughout the research project, and findings from each side inform

further study. This approach creates a fruitful cross-fertilization between theory and understanding of reality (*ibid.*).

As Siggelkow (2007:21) notes, “an open mind is good; an empty mind is not.” Being informed about extant literature on a subject is a necessary prerequisite for a researcher in order to not “reinvent the wheel”. Yet, building propositions solely on theory is not an intuitive process when one is researching a relatively new type of firms. The iterative approach came naturally in the research setup: I was doing an extensive literature review, including the literature on born globals, SMEs, NTBFs (new technology based firms), strategy and entrepreneurship; while empirical observations were guiding the research questions and theory selection. And vice versa, the literature served for creating theoretical frameworks for conducting the focused studies and building the interview questionnaires for the articles.

Each of the studies required knowledge of issues related to specific functional and managerial processes, such as branding, alliance management, R&D management, and managerial capabilities. Before collecting data for each study, a thorough reviews of the related literature was conducted in order to build the theoretical frameworks and outline the themes and issues that needed to be discussed with the interviewees. The interviews were semi-structured: I welcomed discussions of any additional issues that the interviewees wanted to highlight. In this way, I picked up the additional themes that needed to be brought into the framework. The literature review continued simultaneously with the interview and observation process, the theoretical framework was enriched from one interview to another by finding additional theoretical material on the issues that were brought up by the interviewees. I tried to include interviewees of different managerial / specialist levels involved in particular function or project. The experience has shown, however, that top management had the best overview of the organization’s projects and processes – due to the firm’s small size. This is why interviews with the middle- and high-level managers predominate on the interview list.

In most of the articles, the data were analysed using the critical realist approach, which is summarized in Table 3.4 after Danermark *et al* (2002:109-110). The authors however discuss that in different research projects, the stages may be taken in a different order, and while some of the stages may be stressed more, others can be touched upon rather lightly.

Table 3.4. Stages in an explanatory research based on critical realism (summary of Danermark *et al*, 2002:109-110):

Stage 1: description	The analysis starts with the concrete. Describe the complex and composite event / situation intended to be studied. Make use of everyday concepts. Important part: interpretation of the persons involved and their way of describing the situation. Most events should be described by qualitative and quantitative methods.
Stage 2: analytical resolution	Separate / dissolve the composite and the complex by distinguishing the various components, aspects or dimensions.
Stage 3: abduction/ theoretical redescription	Interpret and redescribe the different components/aspects from hypothetical conceptual frameworks and theories about structures and relations. The original ideas of the objects of study are developed when they are placed in new contexts of ideas. Several different theoretical interpretations and explanations should be presented, compared and possibly integrated with one another.
Stage 4: retroduction	The purpose is to answer the following questions in relation to each of the components we focus on: What is fundamentally constitutive for the structures and relations (X), highlighted in stage 3? How is X possible? What properties must exist for X to be what X is? What causal mechanisms are related to X? Stages 3 and 4 are closely related.
Stage 5: comparison between different theories and abstractions	Elaborate and estimate the relative explanatory power of the mechanisms and structures that have been described by means of abduction and retroduction in stages 3 & 4. In some cases one theory will have a greater explanatory power. In others, theories may be rather complementary, as they focus on partly different but necessary conditions.
Stage 6: concretization and contextualization	Examine how different structures and mechanisms manifest themselves in concrete situations. It is important to study the manner, in which mechanisms interact with other mechanisms at different levels, under specific conditions. The aim is twofold: 1) to interpret the meanings of these mechanisms as they come into view in a certain context; 2) to contribute to explanations of concrete events and processes. It is essential to distinguish between the more structural conditions and the accidental circumstances.

Below I discuss, how this approach has been applied in each article:

**In the article on R&D-related capabilities:** through my long-term involvement with the firm, I had an understanding and a description of how its R&D processes are organized and run (stage 1 in the framework). To reduce the complexity and separate the intertwined activities into separate processes (stage 2), as well as to understand, which processes should at all be included into the discussion (stage 3), it was important to organise the data following some kind of a framework, which I hoped to find in the literature. Since no literature on R&D and innovation management on born globals or international SMEs was found, I carried out a literature review on innovation and R&D management in SMEs and new technology-based ventures. A highly suitable framework was eventually found in the publications of Lefebvre *et al* (1998; 1999). Having added additional dimensions from other R&D management literature, a guiding theoretical framework was built. I then organized the existing data along the dimensions, and conducted open-ended interviews in order to fill out the rest of the categories included in the framework. The interviewees had the freedom to discuss any additional issues they felt were relevant. Categorizing the different activities according to the theoretical framework was also contributing to stage 3 in the analytical framework. I used narrative analysis (Bryman & Bell, 2003; Langley, 1999), time lines and content-analytic summary tables (Miles & Huberman, 1994) to organize and analyze the data.

The main purpose of the article was to explain, which specific aspects of the R&D-related capabilities are especially important to sustaining a technology-based born global's competitive advantage in the long term. The case firm has a history of successful performance, while also has a record of activities that were not very conducive to smooth operations of its R&D. In an effort to describe the *mechanisms* that were the causes of effective and efficient operations of the R&D-related capabilities (stage 4), I used retroduction (Danermark *et al*, 2002) / explanation building techniques (Yin, 2003) to draw findings and conclusions from

the study. The practices that led to less effective and/or efficient operations were contrasted with those that were more effective or efficient. The findings were compared to the outcomes for the firm in the long run (3-4 years), and thus contextualized (stage 6). In the Discussion, I attempted to compare and contrast the findings with the relevant extant literature (stage 5).

**In the article on alliance capability**, the objective was exploratory and explanatory: “to explore the alliance capability of born globals in a technology context.” In this study, we used the techniques similar to those used in the article on R&D-related capabilities (in fact, the article on alliances was written before the one on R&D capabilities). I had some knowledge of the three large-scale alliances that the case firm has conducted and their outcomes. The knowledge varied in its depth (stage 1). Together with the co-author, we conducted a review of the vast available literature on alliance management, alliance capability and networks and developed a guiding theoretical framework. I then conducted open-ended interviews with the key participants in the three alliances, having interviewed people at different levels (CEO, CTO, project managers, engineers), in part following the theoretical framework, but also looking to enrich it with new insights that could be specific for born globals in the context of collaborations on technology and new product development (stages 2 and 3).

Content-analytic summary tables (Miles & Huberman, 1994) were used for presenting and analyzing the data across the three embedded cases by organising them according to the theoretical framework. Explanation building techniques (Yin, 2003) were used to trace the mechanisms (which we called organisational skills) that were at work during the alliance process, from the beginning until the very end. Through these techniques, new organisational skills critical for alliance management specifically by born globals in technology collaborations were discovered and explained. We conceptualized them as being constitutive of the alliance capability of technology born globals (stage 4).



Already through the literature review process, it had become clear that the existing literature is not unanimous about what an ‘alliance capability’ of a firm means. Through our study, we have arrived at our own conceptualization, which served to position our study (stage 5): “Alliance capability is regarded as the set of organizational skills necessary from the decision to search for a partner for technology collaboration, through initiation and management of the alliance, until its objectives are achieved, or otherwise.” Furthermore, our study has made me revise the higher conceptualization of an organisational capability from the one based on routines and elements of direction (Grant, 1996), which I had used in the article on the branding capability (it had been written first); to the conceptualization based on organisational processes and managerial heuristics, following Bingham *et al* (2007; 2007a). This conceptualization remained central throughout the dissertation.

The findings of this study are deeply rooted in practice: the alliance outcomes spoke for themselves (some had a successful and profitable outcome, and some did not). Therefore, it was rather easy to trace the mechanisms of alliance management from the born global’s side, which were critical for reaching alliance objectives (stage 6). Furthermore, the processes and other aspects that did function well throughout all three alliances were also traced and included into the capability, based on the importance placed on them by the interviewed managers and the contribution of these aspects to the alliance process.

**In the article on branding capability:** through my position in marketing communications with the case firm, I had knowledge of the unique branding strategy that had been conducted by the born global throughout its history. Narrative analysis of the interview data (Bryman & Bell, 2003; Langley, 1999), observational data and a review of company publications were used to reconstruct history of the firm, its brand strategy at the inception, and its historical implementation. Time lines and an event-state network (Miles & Huberman, 1994) were constructed to visualize development of the case and single out the

critical organizational and individual orientations, activities and events that affected its branding strategies and practices. The case was then written out as a narrative to present a coherent process view of the brand building strategies and activities, separated into specific stages (stages 1 and 2).

Together with the co-author, we then analyzed this development from the theoretical perspective, by comparing and contrasting the findings with the branding concepts and other literature (stage 3). While analyzing the firm's branding strategy and activities, we realized that we could also contribute to specifying the components of brand value to customers in technology B2B markets. We took an existing model of Mudambi *et al* (1997) and applied our empirical data through the processes of textual analysis of clustering and counting (Miles & Huberman, 1994) of the customers' brand values mentioned by our interviewees and in the field notes in order to define their belonging to categories and their approximate relative weight against one another. Our data did fit the larger categories of the model of Mudambi *et al* (1997), but the actual elements and their interrelationship were different from what the authors had defined (belongs to both stages 3 & 4).

Afterwards, we conducted an analysis of the necessary mechanisms (organisational capabilities, cultural aspects and technological developments), which had led to and enabled successful brand building on the international scale by an SME without significant financial investments. The findings were formulated in the discussion of the branding capability of small technology-based firms (stage 4). We have compared and contrasted our findings with the literature (stage 5). As the article was describing a specific and a novel empirical case, it was firmly contextualized and concrete throughout (stage 6).

#### **In the article on managerial capability:**

Throughout the research process, I was analyzing the data as they were being gathered. Although all organizational capabilities are intertwined,

I did have the natural delimitations and focus to gain a deep understanding of a specific set of organizational processes, structures, skills and rules. With each article, the complexity of the processes studied increased, as my understanding of the firm's activities was growing. I started with a rather narrow capability – the branding capability. I then moved on to three distinct embedded case studies in the organization to explore its alliance capability. I then attempted a rather broad stroke of studying the R&D capability, which, besides involving a very large number of organizational processes, rules and structures, also involved covering a whole new field of literature. Finally, the last article on the managerial capability is about the organization's *meta-capability* to adopt and reconfigure its strategy and functional capabilities and match them to the dynamic environments, held by the management. The managerial capability is meant to develop and coordinate all of the other capabilities of the organization. Admittedly, I would have not been able to write this article earlier, before having studied the other, lower-level capabilities.

Having the information from the previous three studies, I conducted a thorough literature review on dynamic capabilities (this discussion is still developing in the literature) in order to find out what a meta-capability can involve. I then applied the narrative strategy (Langley, 1999) in analyzing the firm's history: I had first written out the complete history of the firm, which I had reconstructed from interviews, observations and numerous informal discussions with the firm's employees (stage 1). I then compared the text to the discussions of different stages of firm development found in the literature (Karanjian, 1988; Karanjian & Drazin, 1989; 1990; and others) and have divided the history into the stages discussed in the literature, where the description matched. Where it did not, I put my own labels on the stages of development of this specific firm (different literatures discuss the stages slightly differently, so such discrepancy is rather normal) (stage 2). Using the narrative strategy (Langley, 1999), I then analysed the main challenges the firm faced in each of the stages, how they were solved, and who were the key actors.

Using the findings from the previous stage, I then used abduction and retroduction (Danermark *et al*, 2002) / explanation building techniques (Yin, 2003) to single out the key actions of the main decision makers in the organisation throughout its history in order to infer the key aspects of the managerial capability of the organisation (stages 3 & 4). In my analysis, I have attempted to have a discussion on the impact of the managerial action vs. the impact of the decisions of the mother firm, and the impact of the environmental conditions – the economic recession, thus varying the level of abstraction (stage 5). Finally, there have been continuous references to the factual empirical events that I have observed in the case venture and its environment over time throughout the article, hence the discussion has been firmly contextualized and concrete (stage 6).

### General reflections on the analytical process

The literature discusses that one of the challenges of conducting process studies is the difficulty in analyzing and manipulating the enormous amount of data. First of all, the data are often sequences of ‘events’, the entities that may be difficult to analyze. Secondly, the data involve multiple levels and units of analysis, the boundaries of which are ambiguous. It is difficult to isolate the unit of analysis in an unambiguous way. Thirdly, the temporal embeddedness of the data varies in terms of precision, duration and relevance to the phenomenon being studied. Finally, process data tend to be eclectic due to the changing relationships, thoughts, feelings and interpretations (Langley, 1999). Or as Pettigrew (1990:281) vividly put it, a researcher involved in a process study risks the danger of “death by data asphyxiation – the slow and inexorable sinking into the swimming pool which started out so cool, clear and inviting and now has become a clinging mass of maple syrup.”

Fortunately, I have not experienced the sensation of being overwhelmed by data due to the setup of the research project. To start with, I was studying one single SME. Although the firm operates in a high-tech

sector, and it took me a long time to learn the exact nature of their products and markets, it was completely possible in the time I had with them. It was also possible to gradually learn and become closely acquainted with nearly all aspects of their operations (except for the processes of actual scientific research, engineering development and production) and to have a full understanding of these processes – as opposed to a superficial one, which would have been possible to obtain by having interviews as the major data collection method. Personal familiarity with all the key players in the organization as with my colleagues was also very beneficial and has made the stories much more vivid.

Langley discussed that the objective for a process researcher is to reach the “kind of theoretical understanding that does not betray the richness, dynamism, and complexity of the data but that is understandable and potentially useful to others.” (p. 694) In presenting the studies, I always attempted to preserve richness of the data (to a degree allowed by article length requirements) and included compact, but detailed case descriptions. Together with the co-authors, we also tried to create visual models to represent the findings, whenever possible. Throughout this research, I have tried to be creative in my approaches, transparent in description, and clear about the analysis (Eisenhardt and Graebner, 2007).

### 3.9 Limitations

The strongest aspect of this dissertation – the depth and richness of the study, may also be considered its weakness by some reviewers. The study is exploratory and explanation building, and does not contain attempts to replicate the findings through further case studies. This would be a valuable contribution from other researchers or from me in the future.

As for the limitations in specific articles: in the article on the branding capability, in answering the second research purpose: defining the

components comprising brand value for customers in technology B2B markets, we did not use any objective quantitative technique (i.e. employee survey) to define relative weight of the different aspects of brand value to customers. The reason is that this research purpose emerged almost coincidentally during the research process. We did not plan for it from the start, but then from our data, we realized that this discussion would add much value to the findings and the whole study. Thus, we induced the aspects by the methods of clustering and counting of the main aspects of brand value mentioned in the interviews and noted in the observations (Miles & Huberman, 1994), as discussed earlier, and only devised an approximate relative order of importance of the aspects of brand value to customers in the model.

### 3.10 A final note on the research method

Yin (2003) specifically states that an exemplary case study should be: 1) unusual and of general public interest; 2) the underlying issues should be nationally important, either in theoretical terms or in policy or practical terms; 3) both of the preceding conditions are met (p. 162). I have argued previously for the importance of born globals as an interesting economic and organizational phenomenon. These firms are of high interest to many countries, and especially to the smaller (i.e. European) economies, since a large part of the well-being of these countries rests on the intellectual capital, engineering and scientific abilities of their business firms. Since increasingly more of the activities providing the advantages of scale economies are being moved outside Western Europe, the competitive advantage of many Western European countries factually rests on knowledge intensity of their enterprises. Among the knowledge-intense firms, born globals are significant players, since the technologies and other knowledge that they are based on is applicable far beyond their countries' borders. This makes born globals important contributors to their countries' export activities, international competitiveness, potential engines for economic

growth and employment opportunities (Gabrielsson & Kirpalani, 2004).

In addressing the purpose of this dissertation, I cannot hope to build one comprehensive framework that would contain all the right answers as for how to build and operate a successful technology born global in the long term. I can only hope to contribute with knowledge in specific areas. Therefore, I have chosen to write separate articles exploring and analyzing specific capabilities that enable successful and continuous competitive advantage of such ventures. The last article in the study attempts to investigate a meta-level managerial capability, which is supposed to coordinate and continuously renew the rest of organizational capabilities in a technology-based international SME.

## Chapter 4

# R&D-related Capabilities of Technology Born Globals

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### Abstract

R&D-related capabilities are the cornerstone of existence and competitive advantage of a large number of born globals. However, we know very little about the composition and functioning of these capabilities in international SMEs, considering their resource limitations and international competition. This article investigates R&D-related capabilities of technology-based born globals in order to find out the aspects that contribute to their competitive advantage in the long term. A longitudinal case study of a successful Danish technology born global is conducted to address this purpose. Among the findings are the importance of introducing R&D planning and implementation structures, as well as knowledge sharing processes in the organization, the difficulty of sustaining ambidextrous processes, the importance of extensive environmental scanning, as well as ongoing collaboration among different managerial levels and functions.



## 4.1 Introduction

Rapidly internationalizing SMEs have appeared on markets worldwide and have caused a wave of academic literature in the last decade. Many of these firms are founded on unique technologies and successful products that have resulted from these technologies, as they find application in markets across countries. Differentiation and continuous development of innovative and technologically competitive products for specific market segments is the most viable strategy for international and other SMEs, as they do not have the advantage of scale and scope economies that the bigger firms can have (Aspelund *et al* 2007; Shrader *et al* 2000). In the first years of operations, the novelty of their technologies may allow born globals to enter numerous markets and find demand for their products. However, eventually, other players enter the market, and if they happen to be larger companies with bigger R&D and other resource endowments, it becomes very difficult for the born globals to sustain their technological lead. Furthermore, finding the best application fields for a new technology and developing a potentially commercializable business model that is sustainable over a reasonably long time, is difficult. It takes an extensive period of time, and some start-ups never overcome this challenge (Bruno & Leidecker, 1988). Therefore, understanding the aspects that are important to effective functioning of R&D-related capabilities of technology-based born globals is critical for our understanding of the mechanisms that enable long-term competitive advantage of such ventures.

While the importance of R&D and innovation for born globals is widely understood, the academia is only beginning to investigate R&D and innovation capabilities of such firms. ‘International technological competence’ and innovativeness have been found to be among the cornerstones of competitive advantage of born globals (Knight & Kim, 2009). And a ‘global technological competence’ is highlighted as one of the strategies used by them to achieve superior performance in the

international markets (Knight & Cavusgil, 2004). However, I was able to locate only one study (Gassmann & Keupp, 2007a) that actually investigates what technological capabilities of born globals might consist of and how they operate. The literature on R&D in SMEs is very useful, however the amount of this literature is also limited, as most of the R&D literature's legacy written for over half a century has focused on the issues faced by large organisations.

Seeing the need and importance of exploring this aspect of born globals' operations, the purpose of this article is to investigate the R&D-related capabilities of technology born globals and explain the aspects that are critical to sustaining the firms' competitive advantage in the long term.

This study is expected to contribute to the R&D literature where I have not found studies dedicated to born globals, and relatively few studies on SMEs. The study also contributes to the born global / international entrepreneurship literature, which has mainly focused on the organizational factors that enable rapid internationalization of SMEs, but is only now beginning to look into specific organizational capabilities that enable long-term competitive advantages of such ventures.

## 4.2 Conceptual foundations

### 4.2.1 Born globals

Based on an extensive literature review and in line with the widely accepted definitions (Knight & Cavusgil 2004; Oviatt & McDougall 1994; Gabrielsson & Kirpalani, 2004; Di Gregorio *et al* 2008; Kuivalainen *et al*, 2007), I define a born global as a business organization that has achieved international operations within a few years after its establishment through the application of knowledge-based resources to the sale of outputs in and the combination of input

resources from multiple countries, including those located beyond the firm's domestic continent.

Research shows that most born globals are knowledge-intensive or knowledge-based firms – characterised by high value added to scientific knowledge in both products and processes (Bell *et al*, 2003). They are often based on unique or innovative technologies and/or capabilities. Born globals often operate in B2B markets (Knight *et al*, 2004; Moen, 2002) and utilize a differentiation strategy aimed at specific market niches, as this approach is more viable for SMEs than aiming for a mass consumer market (Aspelund *et al*, 2007; Shrader *et al*, 2000). In some instances, born globals take valuable positions in innovation / R&D value chains of larger organizations by providing highly specialized services and/or technologies to them (Gassmann & Keupp, 2007). The competitive advantage of born globals lies, among other things, in their strong innovative and international entrepreneurial culture (Dimitratos & Plakoyiannaki, 2003; Knight & Kim, 2009; Knight & Cavusgil, 2004), flexibility and closeness to their customers (Knight & Cavusgil, 2004). Faced with the lack of resources (financial and knowledge) and the lack of economies of scale, born globals develop unique bundles of knowledge-based capabilities, which are derived from the knowledge, innovativeness, skills and experience of individual employees. These organizational capabilities enable effective knowledge and resource integration and create the foundation of competitive advantage of these firms (Knight & Cavusgil, 2004; Solberg *et al*, 2008).

International technological competence and innovativeness have been found to be among the cornerstones of competitive advantage of born globals. International innovativeness, which is “the capacity to develop and introduce new processes, products, services or ideas to international markets” (Knight & Kim, 2009:261), is one of the composite factors of Knight's and Kim's concept of international business competence, which engenders superior international performance of born globals. Global technological competence is a firm's “technological ability relative to cohort firms in its industry. It facilitates the creation of

superior products and the improvements of existing products, as well as greater effectiveness and efficiency in production processes” (Knight & Cavusgil, 2004:130). It is highlighted by the authors as one of the strategies used by born globals to achieve superior performance in international markets. However, in spite of the acknowledgement of the macro-importance of innovation and technological competences, I have only been able to locate one study that investigates R&D-related capabilities of born globals in detail (Gassmann & Keupp, 2007a).

#### 4.2.2 Organizational capabilities

Although the literature is still debating, which organisational components comprise capabilities, studies point to the conclusion that in dynamic market environments, capabilities consist of adaptive semi-structured processes guided by managerial heuristics (Bingham *et al*, 2007, 2007a). The heuristics develop through the manager’s experience and the learning capability of the organization. Following the argument of Stalk *et al* that “A capability is a process strategically understood” (1992:62) and building on the work of Grant (1996), Bingham *et al* (2007; 2007a) and my own research, I define a capability as integration of individual specialized knowledge through dynamic and adaptive organizational processes, guided by a firm’s strategic objectives, in order to repeatedly perform a discrete productive task, which relates either directly or indirectly to the firm's capacity for creating value through effecting the transformation of inputs into outputs.

#### 4.2.3 The research-and-development related capabilities

An R&D capability is referred to in the literature as “the processes that enable firms to invent new technology and convert existing technology to develop new products and services. Therefore, R&D capability depends on the routines that help a firm develop new technical knowledge, combine it with existing technology, and design superior products and services.” (Krasnikov & Jayachandran, 2008:2) Following Lefebvre *et al* (1999; 1998), R&D-related capabilities of

organizations can be divided into five groups, namely technological knowledge intensity, R&D strategies, R&D collaboration, acquisition of knowledge from various sources of information and management of technology practices. I also add the category of IP management to this list, based on other literature (Gassmann & Keupp, 2007; Pisano & Teece, 2007; Kitching & Blackburn, 1998).

*Technological knowledge intensity:* normally, the percentage of employees with technical and scientific backgrounds represents a good indicator of technological knowledge intensity and is viewed as a crucial R&D-related capability (Lefebvre et al, 1999). Technology-based SMEs direct specific efforts to hiring and retaining engineers and scientists with the skills critical to the firm's business. A lack of resources to hire a sufficient number of qualified specialists often inhibits an SME's ability to identify, use and assimilate external technical information (Rothwell & Dodgson, 1991).

*R&D strategies:* R&D is clearly firm-specific, and R&D investment is only one and a non-comprehensive determinant of success of a firm's R&D efforts. Even if SMEs make similar levels of investments in R&D, they still differ in the extent, to which they are able to respond effectively to technological change (Nicholls-Nixon, 1995). The way a firm chooses to invest its R&D funds corresponds to its R&D strategies, the broad classic ones being basic research, applied research, product development, process development and improvement of existing products and processes. Improvement of existing scientific and technological assets can be considered a sixth broad strategy, as discussed in the literature on technological change, which emphasizes the cumulateness of technology, knowledge and competences (Lefebvre et al, 1999).

*R&D collaboration:* collaboration with various network players is said to be one of the cornerstones of R&D-related capabilities of technology-based SMEs and born globals, as they suffer from resource limitations and need support in product development and application of their

technologies into finished products (Freeman et al, 2006; Mort & Weerawardena, 2006). The choice of R&D partnerships varies substantially, and the following types of partnerships are defined in the literature: business to business - with customers, competitors and/or subcontractors (Kleinknecht and Reijnen, 1991); university to business – with academic and research institutions (Acs and Audretsch, 1992); and government agency to business (Roessner and Bean, 1994).

*Acquisition of knowledge from different sources of information:* according to Lefebvre et al (1999), the extent of use of R&D information from various sources corresponds a critical capability and reflects the absorptive capacity of the firm (Cohen & Levinthal, 1990). This is the ability to evaluate, assimilate and apply external and internal knowledge to commercial ends. The literature (Caloghirou et al, 2004) highlights the importance of a firm's ability to acquire knowledge from external sources and its absorptive capacity to the firm's innovation capability. Innovation can be understood as a process, in which an organisation creates and defines problems and then actively develops new knowledge to solve them. In this context, individuals and firms may need external sources of cognition and competence to complement their own. Firms also need inter-organisational linkages in order to convert both external and internal knowledge into new types of knowledge and develop new products, processes or services (Caloghirou et al, 2004; Nonaka, 1994; Nonaka and Takeushi, 1995). According to Cohen and Levinthal (1990), a firm's internal R&D expertise and investment into the qualifications of its R&D personnel have a considerable positive effect on developing the firm's absorptive capacity and being able to assimilate and convert external knowledge and information into new products, processes and services.

In a study of British SMEs (Lambert & Barber, 2000), most firms stated their internal competences as the main source of innovativeness and performance. Internal organizational sources of knowledge mainly comprise various functional groups, namely R&D, marketing, production and finance (Lefebvre et al, 1999). Nevertheless, the SMEs

also actively used the following external sources of innovation (listed here as ranked by the SMEs): 1) vertically linked firms – suppliers and customers, 2) knowledge pools: patents, trade fairs, exhibitions, trade associations and legislation, and 3) the science and engineering technology base comprised of universities, research councils, research associations and technology intermediaries. A study of Norwegian small knowledge-intensive firms (Jenssen & Nybakk, 2009) has shown similar sources to be important.

*Management of technology capabilities* can be grouped into six separate, but complementary dimensions (Lefebvre et al, 1999; based on Burgelman et al, 1988 and Lefebvre et al, 1997). These represent dynamic capabilities, which reflect an organization's ability to continuously innovate, renew its operational capabilities, learn, adapt and change over time (Teece et al, 1997). The six dimensions are: a) technological scanning: assessing the technological environment through a capacity to identify, analyse and predict competitors' technological strategies, and a capacity to conduct technological forecasting. b) Integrating technology within the firm through the capacities to integrate new technology, share technological competencies among different functional groups (marketing, R&D, production, etc.), and develop concurrent engineering. c) Intrapreneurship: dealing with entrepreneurial behaviour inside the firm through a capacity to identify and evaluate entrepreneurial initiatives in the business unit and a capacity to fund unplanned but potentially profitable activities. d) Planning technological development, through a capacity to elaborate a long-term strategic technology plan. e) Implementing and managing change through a capacity to involve all hierarchical levels in the organization, a capacity to direct R&D efforts towards the strategic orientations of the firm, a capacity to develop new technological capabilities, and a capacity to manage change imposed by new technologies. Finally, f) commercialization: profiting from innovation through a capacity to commercialize products/services.

*IP protection and management* is the sixth R&D-related capability. It is not included into the discussion by Lefebvre et al (1999), but is discussed elsewhere (Pisano & Teece, 2007; Kitching & Blackburn, 1998) as critical to a firm's R&D strategy and activities. Gassmann & Keupp (2007) have stressed the importance of IPR protection to internationalization of born globals. The unique technologies that born globals and other new technology-based firms (NTBFs) are based on require protection. In their collaborative product development with larger partners, born globals must disclose their technologies, which opens a way to the possibility of opportunism and appropriation of the technologies by the partners. Nevertheless, studies of SMEs (Kitching & Blackburn, 2003; Blackburn, 2003) show that SME managers often do not protect the firms' innovations through legal mechanisms due to the lack of expertise and resources (both financial and human) to file patent applications and conducting other IP protecting activities, scepticism about the possibility of enforcing litigation in case of infringement due to the lack of financial resources, preferences to direct their resources to other purposes, i.e. R&D work instead of patent writing, and unwillingness to disclose the content of their technologies in formal patent applications. SMEs with higher R&D intensity are more likely to apply legal IP protection mechanisms. Many SMEs prefer to protect their intellectual capital with 'informal' means: by using 'factual' means, i.e. secrecy, or high complexity of developments (Gassmann & Keupp, 2007), maintaining the lead time ahead of competition by bringing new products/technologies to the market faster (Blackburn, 2003; Matthews *et al*, 2003), developing high trust with network partners (Blackburn, 2003), or through contractual agreements.

The empirical study in this article is guided by the above dimensions of the R&D-related capabilities found in the literature. The article is structured as follows: methodology is discussed next, followed by the empirical study, where the various aspects of R&D-related capabilities of the case born global venture are discussed. The main findings are deliberated upon in the Discussion and Conclusions section.



## 4.3 Methodology

In order to closely study specific organizational capabilities, I have conducted a longitudinal process case study of one successful Danish technology-based born global. I spent 20-70 percent of my working time at the company's premises as an Industrial PhD student and a marketing communications trainee over the period of 3 years (2007-2010). I had an opportunity to closely observe nearly all aspects of the firm's operations, participate in strategic meetings, discuss various issues with the firm's managers and engineers. The overarching philosophy of science in this study has been critical realism, and the analytical approach has been iterative (Easton, 2010; Langley, 1999): I conducted the study following the theoretical framework and then used the insights from the empirical findings to enrich the framework and make it specific for technology born globals. The main source of data has been participant observation and a series of semi-structured interviews that have focused on specific aspects of the firm's operations. In total, 20 interviews have been conducted with 11 firm members including top managers, R&D project managers and specialists, technology marketing- and regional development managers. The interviews lasted 1-2 hours each. Additional sources of data were the company literature and industry- and mass media publications. These various methods of data collection allowed for data triangulation (Yin, 2003). The data were analyzed using narrative analysis (Bryman & Bell, 2003; Langley, 1999), time lines, content-analytic summary tables (Miles & Huberman, 1994) and explanation building techniques (Yin, 2003).

## 4.4 The empirical study

### 4.4.1 DBG, the case company

The case firm is a Danish technology born global, here code-named DBG. The firm was founded based on innovative technologies in

switching / Class D audio amplification. It was established jointly by the founder – the author of the technologies, and an established Danish electronics manufacturing firm (further – ‘mother firm’), while becoming its independent subsidiary. DBG develops B2B audio amplification solutions: the electronics core of audio devices, which consists of an amplifier, power supply and (in some cases) digital signal processing. The firm operates in B2B markets of consumer and professional audio, mobile and automotive audio applications. The nature of DBG’s customers defines the firm’s geographic markets, which are mainly North America, Western Europe, Japan and Korea. In the 1990s, DBG was one of the companies that started a radical shift in the audio industry from the traditional analogue amplification techniques (used since 1930s) to the much more efficient Class D/switching technologies. DBG currently employs ca. 30 people, has its HQ in the Greater Copenhagen area and regional offices in Tokyo and Chicago.

#### 4.4.2 Technological knowledge intensity

DBG’s business is technology, hence its critical production resource are highly educated and specialized engineers. DBG was founded by engineers, and the percentage of engineers in its staff has always been 70 percent or above. While having its original home at the mother firm’s facilities, after one year, the founder moved DBG into the Greater Copenhagen area, closer to the country’s business centre and into the immediate proximity of the Danish Technical University in order to have access to some of the country’s brightest minds in the scientific and technological fields that DBG operates in. The university’s department of power acoustics is one of the leading in the world. Most of the firm’s engineers are true enthusiasts of their profession and have a great interest in audio. Many of them first joined DBG as students and conducted their degree projects with the firm.

Since its early days, DBG has been closely involved in academic collaboration with the university and has had a number of Bachelor,

Master and PhD students writing their degrees and taking courses with the firm. In the early days of the firm, its R&D strategy was more explorative and students were welcome to explore the application of the switching technologies in new fields. As a result of one such Master thesis, an audio chip for mobile applications was developed. Currently, the firm follows a leaner strategy, where students' projects are brought into correspondence with the firm's R&D needs, and they typically work to enhance the firm's existing technologies. DBG's engineers supervise the projects.

As for personnel development, the engineers are welcome to write (and have published a number of) scientific papers and participate in conferences, although the recent economic recession has put a strain on the firm's resources, including the engineers' time.

#### 4.4.3 R&D strategies

DBG's founder had a very big vision for the firm: "Becoming the Intel of audio applications". In its early years, DBG went through an exploration process where the original engineering team was looking for viable application of its technologies. The first products were high-power amplifiers. The product range eventually expanded to include a number of "Plug&Play" designs. They carry a significant benefit for consumer audio manufacturers due to the general difficulty of incorporating switching technologies into end products. DBG's solutions help to solve this challenge. The original R&D strategies were very much exploratory, the direction was grasped through numerous meetings with customers, visiting trade fairs and finding out, where the firm's technologies could have the largest impact and where the products could be profitable. Often, a decision to expand into a specific market was based on a large customer collaboration or contract. After developing a customized solution, the firm developed another, independent version of the product for its own independent sale.

However in 2008, after a critical change in the firm's ownership and the founder leaving the firm, the updated management team has changed the firm's approach to strategic and R&D planning. R&D planning has become structured, following specific selection procedures. It is discussed in section 4.4.6 "Management of technology practices".

#### 4.4.4 R&D collaboration

DBG has always actively pursued collaborative R&D strategies in order to reach specific product markets where it did not have enough resources to develop a product or compete on its own. In the pursuit of various semiconductor application markets (consumer audio, automotive audio, mobile audio), DBG looked for MNE partners with enough engineering, equipment and manufacturing resources and a good standing in the specific market to collaboratively develop a product, which would have strategic and financial benefits for both firms. From its side, DBG offered its unique, patented technologies and engineering services. Due to the novelty and high performance of its technologies and intelligent marketing on part of the management (discussed further down), DBG was able to obtain very beneficial collaborations with some of the largest players in the mobile phone, consumer audio and automotive audio industries and was able to successfully enter two of those markets by developing innovative products together with the MNEs. The collaboration with the automotive audio MNE did not go successfully due to inadequate project management from both sides. A lot of credit must be given to the founder and the CEO of DBG, who were able to develop appealing business cases to each of the MNEs and 'sell' them the idea of these collaborations, which were extremely beneficial for DBG both in financial and strategic terms.

#### 4.4.5 Acquisition of knowledge from various sources of information

The firm continuously scans its markets and the wider technological environment through reviewing the following sources: 1) patent databases, 2) specialized industry publications and relevant mass media, 3) visiting key trade fairs in the markets of interest, 4) attending professional and scientific conferences, 5) discussions with existing and potential customers, 6) being in dialogue with the world's leading electronics manufacturers and technology trend setters, i.e. Apple. These companies have a strong influence on future development of global technology and product applications. According to the interviewees, being in contact with them provides DBG with very valuable information. An important aspect of this process is that the top managers, sales & marketing managers, and senior engineers often visit trade fairs and customers together. So they are exposed to the same scope of information and develop a common vision of the ongoing international technological development. The small size of the firm and a single location of most of the employees provide a forum for an ongoing discussion, and the collaboration between the R&D, marketing personnel and top management is continuous.

#### 4.4.6 Management of technology practices

In an SME, some of the separate dimensions of managing technology practices discussed in the literature happen through the same processes and are difficult to separate in reality. In this way,

- a) *Technological scanning* in the case firm happens through the sources discussed in section 4.4.5.
- b) *Technology integration* happens through the continuous common marketing activities and an ongoing dialogue between the top management, R&D, marketing and sales personnel. There are no separate business divisions in DBG, and all the departments and project teams seat on the same

floor. Information exchange happens continuously. Besides the informal, there are formal forums for information exchange: whenever a new product is developed, a new project is initiated or an engineering error is encountered, a general company meeting is called and the information is shared. All of the engineering developments since the firm's establishment are kept in an online database, to which each engineer has access at any time.

- c) *Planning technological development.* DBG's top management (consisting of a CEO, CTO (Chief Technical Officer) and COO (Chief Operations Officer)), and with participation from the technology marketing manager and regional sales & marketing managers develop the firm's R&D roadmap based on: 1) general industry information collected through the environmental sources listed above. Individual customers are highly specialized and knowledgeable in their own markets, but often do not see a larger picture of the global technological development, i.e. a merger of various media and an emergence of new technologies and standards, i.e. Wi-Fi for audio and video products. Therefore, continuous scanning of the wider environment and being in contact with the largest technology trend-setters is very important. 2) Being in close dialogue with customers. Due to a long-lasting collaboration and trust developed between DBG and its customers, some of them perceive DBG as a strategic partner and disclose their product development roadmaps to the firm. Thereafter, DBG can come up with technological developments and product proposals to suit the customers' roadmaps. 3) Considerations based on DBG's existing products. Nonetheless, the key source of knowledge and product ideas is the firm's own engineers and managers. They are highly qualified specialists, have the detailed knowledge of the firm's technology and products and, considering the environmental information, know how the firm's

technologies and products can be improved and which new products can be developed. A quote from DBG's CTO:

We follow what is going on with patents related to what we do, and we read technical magazines. Then we, of course, get new ideas from what is going on in the world, from what we see at the exhibitions... All of these you can combine, and then you have to do a lot of thinking. Because it's not enough just to see what the others are doing, you really have to think yourself, to be better. So you cannot rely on somebody else to tell you what to do. Most of it will have to come from yourself. (Interview 16.12.2010)

DBG applies a structured process where new R&D project ideas are assessed along three parameters: business case, project fitness and strategic importance. Business case evaluates the costs and revenue potential of a project. Project fitness assesses whether a product/project fits the current manpower availability and feasibility of time requirements. Strategic importance evaluates whether and how the project and/or potential customer are of strategic importance to the firm, whether it will lead to development of a platform and/or entering of a new market. The results are evaluated on a weighed scale.

DBG utilizes a structured R&D implementation process using a stage-gate model. A project must be approved or can be stopped at any of the 'gates', depending on whether it still meets all of the criteria discussed above. DBG's EMS (electronic manufacturing services) partner in China is involved in the product development process from the early stage of product specification in order to ensure the product's manufacturability and readiness of the manufacturing tools in time for production.

- d) *Intrapreneurship*. Anyone at DBG can initiate a project/product idea and submit a project proposal, where the business case, and the customer and market projections are presented. The project is then evaluated by the Product

Development Council, consisting of the top management following the structured evaluation process discussed above.

- e) *Implementing and managing change.* As discussed, all layers of the firm's management participate in strategic and tactical discussions in an ongoing manner. Until 2008, however, the firm faced challenges related to the differences in the management styles and strategic priorities between the founder, who had a strongly entrepreneurial personality and business style; and the CEO (who joined in 2005), who is a more professional and experienced manager. The founder's entrepreneurial management style was strongly driven by the continuously emerging business opportunities, which did not always fit the firm's planned resource allocation. This sometimes led to sub-standard delivery on promises to existing customers and focusing more on obtaining new leads. The tension was eventually solved by the mother firm purchasing the founder's shares and the founder leaving the firm. After this, the new management team (consisting of the long-term executives, some of whom changed their titles), which is much more uniform in their approach to managing the firm, took the lead. They began applying the structured management rules and processes, which had been present 'on paper' since 2-3 years after the firm's founding, but have not been followed closely due to the founder's entrepreneurial style. The founder's leave coincided with the ensuing financial crisis and recession, which made the need for lean and efficient operations ever more apparent.

The new management has focused the firm's R&D efforts on the markets where DBG had earned a strong standing and a brand name (professional and consumer audio), and has downsized R&D efforts in the markets where it could not compete on its own without support of an MNE (mobile, by then the collaboration with the original MNE partner had finished). For the same reason, the automotive operations



became committed to the mother venture, where the two firms develop complete automotive audio systems together. DBG's research and development have become very focused, with resources allocated only to the projects included into the firm's technology roadmap. Purely explorative research, including explorative academic projects, have stopped, as the firm did not have enough resources for it any longer. In general, the firm's strategic and R&D management has changed from unstructured and highly entrepreneurial, typical for a start-up, to the more formal and structured management principles practiced by more established organizations.

Hence, the firm's capacity to incorporate change, adapt and remain focused on its strategic objectives is embedded in its structured R&D planning and implementation processes. The controlling body that helped to resolve a serious management conflict in the organization was the Board of Directors, which consists of executives of the mother company. At a specific time in the born global's history, it decided in favour of the professional management practices, instead of the purely unstructured entrepreneurial approach to business. On the other hand, the structured processes for R&D planning are flexible enough, as they allow for intrapreneurial activity on part of employees, and for incorporating suggested projects into the firm's strategic roadmap. Short communication lines allow for flexibility and responsiveness to customer needs and changes in the environment.

- f) *Commercialization.* DBG was fortunate to receive early help with maturing its technologies into a first product series from the mother company. However, ever since, DBG has been operating and developing its products independently (unless the mother firm was its customer for a project). The firm's early engineering team rather quickly figured out the product

configuration, which enabled the best application of the technologies into customer-friendly integrated Plug & Play solutions (a strong advantage considering the difficulties of incorporating Class D technologies into consumer products). Marketing plays a crucial role in formulating new products: the marketing & sales managers, top managers and senior engineers discover through their marketing trips specific customer needs, and new product development (NPD) projects are planned and specified accordingly. In this way, integration of the market research and marketing activities happens.

When approaching strategic partner projects (i.e. R&D alliances), DBG's senior managers create a wholesome business proposal that contains strategic interests for all the parties. This requires studying the customer's existing product line, identifying where DBG's technologies can contribute to improving it, making a sample product prototype and allowing the customer to appreciate the value added by a DBG solution.

Besides, DBG has paid close attention to building its brand since its early days (following the 'Intel of Audio vision'). The firm has promoted the brand to its B2B customers using the means at hand, considering that the marketing communications budget was very small. DBG has also pursued promoting its brand to the B2C audience as a component brand using marketing channels of its customers. In some cases, MNE customers, seeing the significant value added by the component product, offered to communicate DBG's brand on their products and/or in marketing materials. Overall, DBG's brand has been built mostly through the innovativeness and technical qualities of the products and engineering professionalism of the firm, earning DBG a respected name in the industry. DBG has been considered *the reference brand* in its technological field for

some years now. Furthermore, the firm began receiving revenues for the use of its brand on the customers' consumer products as a symbol of high audio quality and energy efficiency. The brand has eventually become an important factor in helping to commercialize DBG's products and technologies.

#### 4.4.7 IP protection and management

DBG has always had an explicit IP management strategy and processes and paid a lot of attention to this area. In the early years, the founder's strategy was to patent both major and minor inventions in an effort to protect the firm's innovative technologies from being copied. However, due to the rising costs of sustaining patents, DBG changed the strategy to a more focused one: to sustaining only the core patents and only in strategically selected markets. Other methods of IP protection are also used, i.e. securing the freedom to operate, and sharing the less core inventions at academic conferences, which then become public knowledge and thus cannot be patented by others. The careful IP management strategy has served DBG well throughout its multiple R&D collaborations, where its proprietary technologies had to be disclosed to the partners. Only one case of IP infringement has been encountered – by a Chinese firm illegally copying DBG's products. DBG was prepared to go to court, but pre-empted it by talking to the Chinese firm's customer (also a Chinese manufacturer), who aimed for the premium market and refused to buy the copied products. The copied products have not been seen otherwise.

### 4.5 Discussion and conclusions

Following the findings from the empirical study, below I compare them to the discussions found in the literature on SMEs and discuss, which aspects are specific to born globals, and which specific practices related

to the R&D-related capabilities could be a source of their competitive advantage in the long term.

*Technological knowledge intensity.* The study has shown the importance of getting the right engineering competences into the firm since its early years. Besides the research specialists, the firm should have development specialists and people with manufacturing coordination experience. Developing a raw product prototype, even a highly innovative one, requires one set of skills, but making a product robust and manufacturable in large amounts and in accordance with all the international standards requires a different set of skills and a lot of experience, as stressed numerous times by the interviewees. Organising effective and smoothly running R&D processes in a firm also requires a lot of knowledge and experience. The findings therefore confirm the discussions of Lefebvre (1999) and Rothwell and Dodgson (1991) about the importance of having the right competences on board of a technology start-up in order to give it a chance for survival and long-term operations.

*R&D strategies.* This study has shown the importance for a born global of understanding its core competencies and the need to preserve, develop and protect them early in its history. Active entrepreneurial activities and the continuous search for new markets may lead the born global into too many markets, where it cannot simultaneously sustain technological leadership and continuous innovation in the face of competition. Previous research has shown that small firms may outsource both core and non-core competencies, which may be detrimental to their business (Sen & Haq, 2011).

The study has also confirmed that a niche differentiation strategy is the most viable one for born globals that develop knowledge-intense physical products or services. It is very difficult for an technology-based SME with limited R&D resources to sustain innovation leadership in more than one (or a couple of closely related) markets simultaneously on an ongoing basis.

*R&D collaboration* have shown to be a vital and an integral part of the R&D strategies of born globals, confirming the extant literature (Mort & Weerawardena, 2006; Freeman *et al*, 2006; Coviello & Munro, 1995; 1997). Strategic and well-planned collaborations with MNEs can help a born global to develop its technologies into marketable products, enter into new markets, build a brand, and secure revenue inflow in the first critical years of the firm's operations. In this way, they can secure the firm's survival and fund its further R&D.

However, the study has also shown that in the long run, collaborations with MNEs may lead a born global into the markets where it cannot compete on its own once the collaboration with the MNE is over. It is therefore, critical for born globals to make well-considered decisions based on the competitive situation on the market and own resource availability relative to that of competitors, on whether to remain and compete in such a market, or quit it altogether before large investments into independent products are made. MNEs have a different level of R&D resource availability and libraries of existing technological developments that they can build on. Therefore, their time-to-market will be multiple times shorter than those that a born global can offer; and the flexibility of product features offered by the MNEs would be incomparably larger. A born global could compete with MNEs in one or a few related market niches, but in this case, the born global would have to focus its R&D spending on those markets and not spread them broadly.

*Acquiring knowledge from different sources of information:* the study has revealed the high importance of continuous and widely reaching environmental scanning processes for sustaining a born global's technological competences. External source of information are extremely important for informing internal R&D about the market- and wider technological developments. The sources that can be important are patent databases, specialized industry publications and relevant mass media, the key trade fairs in the markets of interest, professional and scientific conferences, and close contact with the

customers. The findings thus confirm those of Lefebvre *et al* (1999), Lambert & Barber (2000), and Jenssen & Nybakk (2009) as for the importance of external sources of information for knowledge-intensive SMEs. An interesting additional finding is the importance of being in dialogue with the world's leading electronics manufacturers and technology trend setters, since they, to a large degree, decide the direction of the future global technological development.

*In managing technology capabilities:*

*Technological scanning and technology integration within the firm.* Besides the aspects discussed above, an important learning that runs throughout the study is the critical importance of the close and continuous collaboration and knowledge sharing between engineering and marketing managers and the top management in marketing processes, environmental scanning, technology strategy development and product planning to the effectiveness of the firm's R&D-related capabilities. The continuous collaboration leads to a well-informed and unified perspective on the development of international technology markets among all the key decision makers. The ongoing contact with existing and potential customers through marketing visits create a well-rounded knowledge of the international technological environment, leads to a unified decision making and to creating timely and well-specified products demanded by the customers. It also helps to estimate potential demand for planned products and calculate their commercial potential. Such integrated approach enables a coherent worldview and strategic and technology planning inside the venture, thus overcoming possible communication problems between the marketing & sales and R&D departments.

The findings support the argument for the importance of effective internal communication and knowledge sharing throughout the organization to enable knowledge sharing and technological learning (Trott, 2008; van den Bosch & van Wijk, 2001). The study shows the importance of both formal and informal ways of communication, and

the advantages of a single location of a firm's employees. It has become apparent from the study that even a very small firm can suffer from internal division, and knowledge and information sharing may be interrupted. The findings highlight the importance of active managerial action in introducing regular formal forums for discussion, i.e. regular all-company status meetings, or meetings for specific purposes. The coherence of general management of the organization, which will be discussed in the next session, contributes to the free flow of informal communication and knowledge sharing, which is also very important for creating a collaborative atmosphere inside a firm.

*Planning technological development and intrapreneurship* have shown to be closely related. While international entrepreneurial practices of born globals are one of their defining characteristics (Knight & Cavusgil, 2004; Autio et al, 2000), the study has shown the importance of introducing structured management principles into the organizations. Continuous unstructured entrepreneurial practices, where the firm reacts to the many market opportunities without considering the consequences to the overall R&D roadmap and resource allocation may lead to ineffective and inefficient use of resources, spreading them too broadly, and a failure to deliver on obligations to existing customers. If a firm is to be sustainable in the long run, there is a need to replace the chaotic entrepreneurial behaviour with more structured strategy and resource planning processes. This finding supports the findings of Bingham et al (2007a) about the fundamental value of implementing structure into young entrepreneurial ventures in order to organize the firm's experiences, learn from them, and develop effective organizational capabilities. The findings also support those of Lefebvre et al (1999) in that a firm's ability for long-term strategic technology planning is one of the significant determinants of its export performance.

Meanwhile, it is also important to leave a window for exploration and intrapreneurship for the organization's employees to take initiative and ownership of the projects they initiate (Drucker, 1985; Stevenson &

Jarillo, 1990; Teece, 2007). This leads to the firm retaining flexibility and being able to react to newly arising market opportunities. The central finding of this study is the actual mechanisms of structured processes for R&D planning and implementation, which have shown to be effective in organizing the firm's resources, while allowing for intrapreneurial initiative at the same time. The structured approach also helps to discover profitable and sustainable business models and markets for the organization and make investment decisions based on this information.

A related important finding from this study is that ambidexterity – sustaining simultaneous and ongoing explorative and exploitative processes in a firm (Tushman & O'Reilly 1996; He, Wong, 2004) is not necessarily possible for SMEs. Being able to fund ongoing explorative research is a commitment that very few SMEs would be able to uphold. A more viable approach is a careful crafting of an R&D roadmap, considering the numerous inputs from the firm's environmental scanning, customer contact and the firm's own internal sources of knowledge, followed by committing resources to the research and development projects that are included into the roadmap based on the potential demand and profit considerations.

*Implementing and managing change.* This aspect touches upon dynamic capabilities of organizations. These are meta-level capabilities, which deserve a dedicated study of their own. The ability to implement and manage change involves a combination of a number of organizational processes. They involve consistent decision making by the top management team, ongoing internal communication, collaboration among the different managerial levels and organizational functions, as well as the implementation of the structured R&D planning processes, discussed above. The dynamic capabilities highlight the importance of *managerial capabilities* of born globals, where the top managers introduce business processes and principles that enable all of the above processes to happen. Internal division in the top management team negatively affects the managerial capability. An external supervisory



body, such as a board of directors, is helpful in solving deep divisions in the firm's management and other high-level misalignments, as seen from this study.

*Commercialization* is closely related to the processes of environmental scanning, marketing, and technological planning in born globals. This study has shown the importance of integrated marketing and technological scanning activities, and of keeping close contact with the customers and technology trend setters. In B2B markets, where many technology born globals operate, the amount of customers is limited, and keeping a close contact with them and developing products according to their specific demands is a viable strategy for the smaller suppliers. Scientific approach to strategic planning: market assessment and applying formal strategic planning models enables a born global to define markets with the most potential and the most viable business models, considering the firms' core competences and resource availability.

This study has uncovered a separate important aspect of product commercialization for technology born globals: understanding the product line-up of potential customers and being able to develop a product and a commercial offer that would be interesting for the customers to collaborate on. Strategic alliances and other long-term collaborations are not obtained based purely on a unique technology. A born global needs to show potential customers how this technology can benefit their product offerings from the technological and customer value perspectives, both in the short and the long run. The other commercialisation aspect is being able to develop a business offer – possibly, a strategic, long-term collaboration, that a customer would be interested in.

*IP protection and management.* A clear IP management strategy and implementation processes have shown to be of critical importance for born globals and other technology-based SMEs. This is an important point, considering the evidence of reluctance of some SMEs to

undertake patenting practices (Kitching & Blackburn, 2003; Blackburn, 2003). The findings from this study confirm the suggestion of Gassmann & Keupp (2007) that the scope of IPR protection of SMEs indirectly affects their early and rapid internationalization. Today's technological capabilities enable rapid advances in all fields of science and technology. Competitors may hire other talented engineers and can 'catch up' on a born global's technologies and develop equally valid ones of their own. Therefore, a well-considered strategy for IPR protection is critical for defending the firms' basis for existence. The study has also shown that due to costliness of patenting practices, it is important for a born global to find a suitable mix of IPR protection mechanisms that it is willing and able to carry out in the long term. A set of alternative preventive IP protection mechanisms can be used, i.e. notes of invention signed with a notary, and sharing of non-core developments at academic conferences.

## 4.6 Managerial implications

This study has revealed a number of managerial practices related to R&D-related capabilities of a successful technology born global, which can be very valuable for managers of similar companies. The detailed learnings about defining a firm's strategy, implementing R&D resource planning and management processes, streamlining internal operations, organizing international knowledge sharing processes, as well as external marketing and technology scanning processes are expected to be particularly useful.

## 4.7 Avenues for further research

This study has generated a number of insights about the functioning of the R&D-related capabilities in a technology born global. More case studies of born globals to investigate deeper or add other aspects of the R&D-related capabilities would be beneficial. To enhance our knowledge in this field, further research avenues would be to convert

the findings into testable propositions and hypotheses and test their statistical generalizability on a sample of technology-based born globals.

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## Chapter 5

# The Alliance Capability of Technology-Based Born Globals

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### Abstract

Being small and resource-limited, born globals reach out to MNE partners to access complementary engineering and other resources in knowledge-intensive industries. However, managing complex technology collaborations in the conditions of resource imbalances is a challenging task for a born global. How can born globals compensate for power imbalances and gain the benefits from an alliance required in order to support rapid internationalization and long-term international operations? Several studies have focused on the more general networking capabilities of born globals, but much less is known about the capability required to manage individual alliances with MNEs. Building on a longitudinal qualitative study of a successful Danish high-technology born global, we uncover the organizational skills

critical for alliance management in technology collaborations with MNEs. A preliminary framework is presented along with a set of propositions that specify the organizational skills constituting a born global's alliance capability.

## 5.1 Introduction

Born globals have attracted a wave of academic attention in recent years. Characterized by a borderless view, managers of these firms develop strategies and make resource commitments to achieve their international goals near the firms' establishment (Knight & Cavusgil, 2004; Knight, Madsen & Servais, 2004). Many born globals are technology-based, achieving competitive advantage through developing novel technologies and sustaining their technological leadership in an industrial niche (Moen, 2002). These young and small firms are characterized by limited resources, both financial and human (Gabrielsson & Kirpalani, 2004), as well as a lack of legitimacy in product and country markets (Zaheer, 1995). To overcome these, born globals develop a set of knowledge-based competitive capabilities (Knight & Cavusgil, 2004) and carry out intense networking strategies to rapidly access new markets and complementary resources (Mort & Weerawrdena, 2006; Freeman, Edwards & Schroder, 2006).

The costs and risks of new product development (NPD) could be overbearing for a small firm, but are manageable with the support of a multinational enterprise (MNE) in exchange for a certain exclusive benefit – such as becoming an exclusive customer for a product or getting an exclusive license to use the born global's technology. Such collaborations are often critical for technology-based born globals. Their alliance capability is thus a basis for competitive advantage and survival. The literature discusses born globals and their networking strategies (Coviello & Munro, 1995; 1997; Mort & Weerawrdena, 2006; Freeman *et al*, 2006). Several studies stress that external network relationships generate benefits such as information and knowledge

sharing, access to foreign market opportunities, increased innovation capability and referral trust and reputation (e.g., Chetty & Stangl, 2010; Laanti, Gabrielsson & Gabrielsson, 2007; Sharma & Blomstermo, 2003; Zhou, Wu & Luo, 2007). Another theme discussed is the specific networking capability required of born globals in order to build strong, supportive international networks (Freeman *et al*, 2010; Weerawardena *et al*, 2007; Zhang, Tansuhaj & McCullough, 2009). The skills required in the management of a portfolio of alliances are also discussed (Vapola, Paukku & Gabrielsson, 2010). However, we know less about the specific skills and processes necessary in effectively managing individual alliances between born globals and larger organizations.

Born globals collaborate with larger MNEs to gain access to their engineering, manufacturing and marketing resources, distribution channels, and new product and country markets (Freeman *et al*, 2006). The literature on managing strategic alliances is abundant (e.g., Doz & Hamel, 1998; Ireland Hitt & Vaidyanath, 2002), but does not reflect the specificities of born globals. Firstly, as born globals collaborate with MNEs, there are significant power imbalances (Vapola, 2011). How do they compensate for limitations in terms of resources, experience and influence? Secondly, a collaboration is often assumed to involve a number of functions and actors from the organizations, each contributing with their expertise (Kale, Dyer & Singh, 2002; Doz & Hamel, 1998). Born globals normally have a limited number of employees. How do they manage the multiple contacts that an MNE may expect? Third, it is generally implied that alliances last for a long period of time and that it may take years before the goals are reached. For example, Hamel (1991) discussed cooperation between Western and Japanese firms that continue for decades. Technology born globals, on the other hand, are characterized by a rapid industry entry and quick innovation cycles, requiring a faster return from external collaborations (Freeman *et al*, 2010; Johansson & Vahlne, 2003; Laanti *et al*, 2007). Finally, technology alliances are particularly complex, as they require close collaboration on the operational level, risks in disclosing the

know-how, high level of uncertainty, interdependence between partners; while often being conducted across countries and continents. Studying this type of collaborations, in our view, is equally relevant for both the academia and practitioners. Technology alliances are an important part of international strategy and competitive advantage of born globals.

Therefore, in this study, we aim to explore the alliance capability of born globals in a technology context. Alliance capability is regarded as a set of organizational skills necessary from the decision to search for a partner for a technology collaboration, through initiation and management of the alliance, until its objectives are achieved, or otherwise. A high-technology Danish born global's alliances with Asian MNEs for NPD purposes in audio semiconductors are analysed. Our focus is on *the firm-level* skills that constitute the alliance capability of born globals in managing *individual alliances*.

## 5.2 Born globals and their alliance capability

Typically poor in tangible resources, born globals develop unique, idiosyncratic intangible knowledge-based capabilities in order to rapidly internationalize and stay competitive in diversified markets (Knight & Cavusgil, 2004). High flexibility and a lack of deeply embedded administrative routines are core features that give the firms the flexibility and speed of market responsiveness that provide a competitive edge over larger, established firms (Knight *et al.*, 2004; Knight & Cavusgil, 2004; Autio., Sapienza & Almeida, 2000). Following a number of authors studying born globals and other early internationalizing ventures (Knight & Cavusgil, 2004; Sapienza *et al.*, 2006; Weerawardena *et al.*, 2007; Rialp, Rialp & Knight, 2005), as well as the emerging stream of alliance theory (Dyer & Singh, 1998; Grant & Baden-Fuller, 2004; Kale *et al.*, 2002; Draulans, deMan & Volberda, 2003), we apply a knowledge-based view.

### 5.2.1 Previous research on born global firms

The theoretical understanding of born globals is still developing but has increased substantially during the last decade. Born globals are characterized by an early and rapid international entrepreneurship process, and by “building competitive advantages through the development of complex international resource configurations” (Karra, Phillips & Tracey, 2008, p. 441; *cf.* Di Gregorio, Musteen & Thomas, 2008) that reach remote markets (Crick, 2009; Laanti *et al.*, 2007). This intense process is supported by a set of capabilities. Weerawardena *et al.* (2007) stress a market focused learning capability, an internally focused learning capability and a networking capability as critical to rapid internationalization of SMEs. Based upon an extensive literature review, Rialp *et al.* (2005) delineate an internationalization capability which is based upon mostly intangible resources, such as relational and human capital. Knight and Kim (2009) define an SME’s international business competence as based upon the dimensions of international orientation, international marketing skills, international innovativeness and international market orientation. Zhang *et al.* (2006) found that born globals are statistically different in their dimensions of the international learning capability, international networking capability and international experience.

Research suggests that networks support born globals in their internationalization processes (Chetty & Holm, 2000; Coviello & Munro, 1997; Madsen & Servais, 1997), and the network is a key construct in the theory building (Rialp-Criado *et al.*, 2010). Sharma and Blomstermo (2003) have found that born globals learn through networks during their internationalization, and that weak ties to international firms play a central role at an early stage. Zhou *et al.* (2007) discuss how firms can get knowledge about market opportunities, experiential learning and referral trust and stress the importance of home based social networks. Chetty and Stangl (2010) argue that diverse network relationships will support a more radical innovation- and internationalization process for the firm, while

Freeman *et al* (2010) discuss how born globals gain technological knowledge through network relationships based upon relational trust. The literature also shows how a born global may gain different benefits or use different networking strategies depending on the particular constraints it needs to overcome (Freeman *et al*, 2006). Gassmann and Keupp (2007) found that born globals grow by attaining unique and specialized positions in international value chains, while Weerawardena *et al* (2007) argue that born globals can compensate for having fewer resources by developing a networking capability based upon the owner's/manager's profile. Vapola (2011) shows that access to global markets, reputation associations and technology appropriation benefits are the drivers behind an SME seeking cooperation with multinationals. Gabrielsson and Kirpalani, (2004) add that these partners can help a born global by acting as system integrators and distributors for a born global that is not able to perform this function by itself. For example, an MNE can assist in exploiting a born global's skills in areas such as design or research and development on a wider market. In discussing the dynamic networking capability, Mort and Weerawardena (2006) found that it can help born globals to reduce risks in entering new markets and in exploiting opportunities.

This short review reveals the existence of a substantial body of knowledge on born globals and their networks. However, the focus is mainly upon the different types of advantages that they can generate and the capabilities required for developing and maintaining the network as a whole. We know much less about how born globals manage individual relationships. This can be particularly challenging due to the fact that born globals have limited resources compared to larger internationalizing firms (Laanti *et al*, 2007; Rialp-Criado *et al*, 2010; Sharma & Blomstermo, 2003), often collaborate with much more resourceful MNEs and find themselves in resource-dependent and weaker positions (Freeman *et al*, 2006). We will therefore investigate the alliance capability required by a born global to manage the interaction in strategic alliances with MNEs.

## 5.2.2 Managing strategic alliances

Strategic alliances in general, as well as international alliances have been studied by numerous authors, covering various aspects (for an overview, see, for example, Gulati, 1998; Robson *et al*, 2006). An alliance can be defined as a “medium- to long-term contractual arrangement in which two or more independent organizations acknowledge their mutual interdependence and strive to pool their resources to jointly create an outcome that neither of the exchange parties can easily attain on its own” (Schreiner, Kale. & Corsten, 2009, p.1402). According to Grant and Baden-Fuller (2004), it is a superior organizational form for accessing additional knowledge, particularly when quickly changing market conditions call for rapid product development. Alliances are also an efficient means for spreading risks and creating option value for limited investments in new knowledge areas where NPD is characterized by a high level of outcome uncertainty (Sivadas & Dwyer, 2000).

Alliance capability has many definitions in the literature (*cf.* Anand & Khanna, 2000; Schreiner *et al*, 2009; Draulans *et al*, 2003; Kale *et al*, 2002; Heimeriks & Duysters, 2007). We consider the alliance capability as the full set of organizational skills necessary from enactment of the decision to look for complementary resources through a collaboration with another organization, through the initiation and management of an ongoing alliance, until the objectives of the alliance are achieved or otherwise, and including the follow-up learning processes.

Many studies investigate the factors that may support alliances. Often, however, their focus makes it difficult to directly apply the results to born globals. One topic is the formation of alliances. For example, Gulati (1999) concludes that it is supported by a firm’s earlier network resources. Eisenhardt and Schoonhoven (1996) find that alliances are formed if a firm is in a strategically vulnerable position within an industry that is very competitive. This is quite similar to the situation of



a small high tech born global. The authors also conclude that alliances are more likely to develop if supported by a large, experienced team of senior managers. This illustrates a specific challenge for many born globals, as these newly established enterprises are often run by an entrepreneur rather than by an experienced management team (Gabrielsson & Kirpalani, 2004). They will therefore also lack an initial support of an existing network.

Ireland *et al* (2002) discuss the significance of the early phase of alliance formation and of choosing the right partner. They conclude that alliance management should encourage knowledge and social capital development and build trust in external relationships. Differences in expectations and views on how partners should contribute often undermine alliances (Doz & Hamel, 1998). Ireland *et al* (2002) argue that firms need to evaluate similarities and differences in their organizational structures, specify the scope of the alliance and how to handle conflicts. The ability to manage conflicts and differing opinions and prevent them from undermining the cooperation is a major research theme (Elg, 2002; Ireland, *et al*, 2002; Parkhe, 1993; Ramaseshan & Loo, 1998). In most cases, a small technology born global is likely to have a narrow and a well defined scope compared to a major MNE. Furthermore, it appears especially important to recognize organizational differences in relation to MNE partners and consider how to handle asymmetries and conflicting perspectives. The literature often discusses these problems based upon the assumption that alliances are formed between two relatively large companies with numerous organizational levels and decision making units. For example, coordination between different organizational levels is discussed along with the need to develop clear control structures, invest in relation-specific assets and to build communication “bridges” at different levels (Doz & Hamel, 1998; Dyer & Singh, 1998). While control and communication is likely to be important for born globals as well, the situation is rather different for a firm with much fewer decision levels and short communication lines. Draulans *et al* (2003) find that evaluation of individual alliances is helpful in building up the alliance

capability for firms with limited alliance experience. Cross-alliance evaluation along an increasingly complex set of factors is effective for more experienced companies.

Successful alliance management is mostly regarded to be based upon the building of trust and on coordination and communication (Kale *et al.*, 2000; Kanter, 1994; Sivadas & Dwyer, 2000). Gulati & Sytch (2008) show that this is often done over a long time period, based upon interactions between different boundary spanners and facilitated by organizational similarity. Parkhe (1998) presents a similar view in arguing that trust is developed over time, based upon multiple interaction and reinforcing, positive experiences. In the long run, this may overcome organizational differences concerning, for example, culture. Kauser and Shaw (2004) argue that trust, commitment, communication and coordination will explain success of international strategic alliances. Schreiner *et al.* (2009) discuss coordination, communication and bonding as critical parts of the “alliance management capability” – the skills necessary for managing individual alliances in post-formation stage. Research on strategic alliances is thus quite consistent as for the aspects influencing positive results of alliance management. However, many suggestions are problematic for a newly developed born global. First, the notion of trust as a result of a long-term process suggests that the born global will have to cope with alliances with a low or moderate level of trust. Second, due to its limited size the born global is not likely to be able to develop multiple contact points with its partners. This may also make it more difficult to overcome organizational differences. Born globals thus have to take a different route to managing their alliances.

Several authors stress the central role of learning and knowledge sharing (Gulati, 1999; Hamel, 1991; Hitt *et al.*, 2000). According to Lorenzoni and Lipparini (1999), absorbing new knowledge generated through alliances is particularly relevant for young firms, since their knowledge capital is relatively small. A part of the reasons for entering into collaborations is enhancing their knowledge base, maturing their

technologies and learning to implement them in product applications. Freeman *et al* (2010) stress the central role of knowledge development in business relations for born globals and the essential support from relational trust. According to Heimeriks and Duysters (2007), developing a firm's alliance capability relates to a process where individual experiences and knowledge ultimately shape the organizational learning process, which in turn, impacts capability development. Kale and Singh (2007) discuss the learning processes of articulating tacit knowledge into explicit, codifying, sharing, and internalizing the knowledge by other firm members. An alliance management function is seen as an effective means of centralizing the learning processes, conducting and enhancing them. It is unlikely that a born global would be able to afford a separate alliance function, and the learning mechanisms are likely to be less complex. However, sharing the alliance management experiences by the direct alliance participants with the rest of the firm is likely to be important.

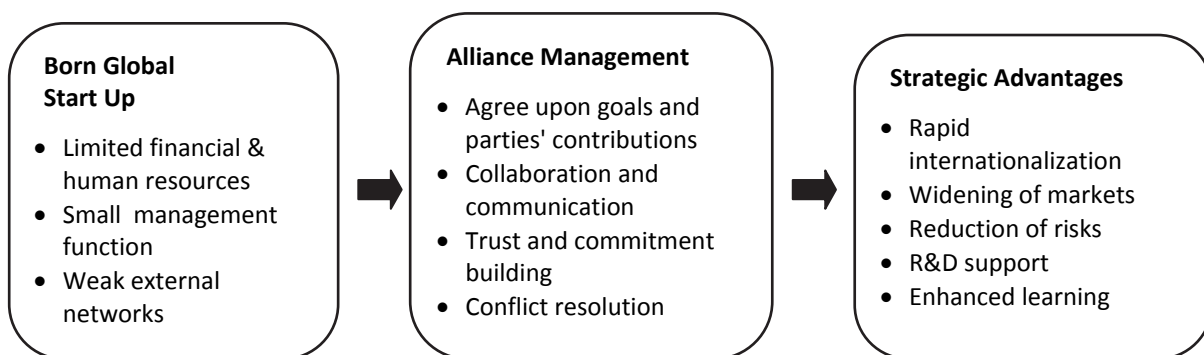


Figure 5.1. Theoretical basis for the study

In Figure 5.1, we summarize the insights provided by earlier research. It shows that born globals suffer from weaknesses in terms of lack of human and financial resources. Furthermore, the management function to a large degree consists of the founding entrepreneur(s), often with a lack of management experience and a limited management team. In the early start-up phase, born globals do not have the support of an established network. Strategic alliances can compensate for these

weaknesses. Earlier studies identify several strategic advantages that can be gained from successfully managed alliances. They can enable a born global to increase the speed of internationalization; get access to wider markets (including both customer and resource input markets). They can also reduce investment risks, support R&D processes and contribute to organizational learning. The literature discusses aspects of successful alliance management. They concern the ways, in which firms should match their goals and expectations, the importance of effective collaboration and communication mechanisms, development of trust and commitment between the parties and conflicts resolution. As argued above, some of these management aspects are very challenging for a born global, and there is limited knowledge of the skills that will be needed in order for the firm to be successful in its alliance management. We refer to these skills as *the alliance capability of born globals*. Taking this approach as a basis, we have conducted an empirical study of three NPD alliances of a technology born global with different MNE partners in order to identify these skills.

### 5.3 Methodology

Our purpose involves theory building in a new field, and the case study design can be particularly useful for this (Ghauri, 2004). In line with the ideas of Eisenhardt (1989) and Eisenhardt and Graebner (2007), we develop propositions regarding the skills that will influence an outcome of a born global's alliance activities, based upon in-depth case analyses and earlier theoretical insights. In order to explore and conceptualize the rich and multidimensional phenomenon of an organizational capability, we have conducted a longitudinal process study of a Danish technology born global. It can be characterized as a single case study design with three embedded cases (Yin, 2003), consisting of the firm's alliances with Asian MNEs. Strategic alliances have been an explicit part of the firm's strategy from the start, including at least seven alliances over its 11-year history. We have chosen three alliances based on their similarity of content. All of the alliances concern development

of a new semiconductor product. Another factor was that the alliances had led to varying outcomes. This enabled us to see how different factors may support or hinder the cooperation in different phases.

The literature discusses difficulties in measuring alliance outcomes – and as a consequence, difficulties in measuring alliance capability (Gulati, 1998). However, there seems to be an emerging consensus that the managers’ assessment of performance provides a relevant measure (Kale *et al.*, 2002). We asked the firm’s CEO to evaluate the alliance outcomes as compared to their objectives, on a qualitative scale. The results are presented in Table 5.1. This is based only on one person’s subjective opinion but can nevertheless give the reader a picture of the nature of the alliances.

Table 5.1. Evaluation of alliance outcomes by the CEO

<b>Alliance 1</b>	Technical objectives	<i>Largely successful</i>
	Financial objectives	<i>Largely unsuccessful</i>
<b>Alliance 2, phase 1</b>	Technical objectives	<i>Successful</i>
	Financial objectives	<i>Successful</i>
<b>Alliance 2, phase 2</b>	Technical objectives	<i>Largely successful</i>
	Financial objectives	<i>Successful</i>
<b>Alliance 3</b>	Technical objectives	<i>Unsuccessful</i>
	Financial objectives	<i>Unsuccessful</i>

Due to the research setup of the first author as an Industrial PhD student with the case firm, a rather unique internal study based upon participant observations over a three-year period was possible. Besides being longitudinal, this study served as a revelatory and a critical case (Yin, 2003). The longitudinal process study allowed investigating the evolution of a capability over time and an understanding of the roles that different skills play in different stages of an alliance. Considering that capabilities are highly complex, a strong aspect of a case study approach is that it enables contextualising the studied phenomena, and taking into account a large variety of variables (Ghauri, 2004; Yin, 2003). Enabled by the versatile case study methodology, we have used

observations, interviews and a review of the relevant company literature as data sources. Following the theoretical sampling logic (Eisenhardt & Graebner, 2007), we focused on actors that were directly involved in the alliances, and organizational employees on different levels. Seven in-depth interviews were conducted with the top managers, R&D project managers and engineers in 2009-2010, each lasting about 1.5 hours. They covered general aspects about the cases related to key theoretical constructs, as well as following up certain remarkable events and details that were observed. The empirical material was collected over three years. The data collected through various methods was triangulated to strengthen internal validity of the findings (Yin, 2003).

We applied iterative reasoning, widely advised for conducting process studies (Langley, 1999; Pettigrew, 1990; Dubois & Gadde, 2002). The results were analyzed alongside data collection in order to develop or add theory to our framework and inform further data collection. The study was thus conducted using the methods described by Ghauri (2004) and Miles and Huberman (1994). First, each embedded case was written out as a story. Then the cases were coded, and findings were analysed against theoretical knowledge from the literature. We built case matrixes, which were then 'stacked' together in order to arrive to common themes among them, and from there – to the specific propositions about the alliance capability (Miles & Huberman, 1994).

## **5.4 A study of the alliances of a technology born global**

The firm in this study will be called DBG – a Danish technology born global that specializes in highly efficient Class D audio amplification technologies and products and holds some of the world's leading know-how in the field. The founder was the author of important theoretical developments in this field. Application of Class D technologies has revolutionized the audio industry, as they allow for significantly higher energy efficiency and compactness of the resulting products as

compared to the traditional analogue technologies developed back in the 1930s. DBG was founded in 1999 as an independent subsidiary of a larger Danish manufacturer, with the founder as the second investor. It was managed independently of the mother firm for most of its history. DBG's and the mother firm's products and markets are very different: DBG's products are aimed at industrial customers, while the mother firm's – at consumers.

DBG's first international customer was obtained within two years, and the first international R&D alliance was started during the third year of the firm's operations. The born global has been financially profitable since 2005. Today, it is a specialized engineering firm with about 35 employees with headquarter in Denmark and representative offices in Japan and the US. The products are amplification solutions for consumer, professional, automotive and mobile audio. Customers come from the US, Western Europe, Japan and Korea. Collaborations with MNEs have been used actively by DBG to develop its technologies into products for specific application markets, where the firm did not have the internal resource, competences or equipment to complete product development. DBG, however, is very clear about its core competences and their protection, and has always kept the core technological development in-house.

#### 5.4.1 Alliance 1: Developing the first audio chip for versatile applications with MNE1

Soon after its establishment, DBG realized the need for creating an integrated circuit chip, which would contain its core technologies. The objectives were to miniaturize a part of the amplifier module and enable more creative end-product designs, and to protect the core technologies from copying. DBG lacked the skills, resources and specific equipment to implement their technologies into a chip. MNE1 – a major Japanese manufacturer of semiconductor products for a number of industries, including consumer audio, was identified as a potential partner. Based on the novelty and superiority of its technologies, DBG would enter

into the collaboration with patents and design engineering resources. MNE1 would implement the technology into two chips, one for each partner. MNE1 was a highly suitable partner: it had the chip development processes, equipment, engineering resources, as well as the manufacturing and quality assurance and distribution capacities. It also had a large customer network and a strong reputation in the global consumer audio market. MNE1 would develop, manufacture and distribute both its own and DBG's chips. DBG would receive a royalty from the sale of each chip.

At this stage, the founder's role was significant. He effectively presented DBG's superior technologies and developed a beneficial business case for the partner. He had a similar role in the following partnerships in this study.

The interviewees often stressed the role of a detailed contract. In this alliance, negotiations finally resulted in an extensive contract specifying resource contributions, investments and rewards from the project, target product specifications and deadlines, and possible issues of future competition. The collaboration was conducted by frequent travelling between Europe and Japan, email, teleconferences and net meetings. The business and engineering information flows were separated between the top management and engineers respectively. The project had a clear and stable management within DBG, although the manager also had engineering responsibilities, which could distract him from overseeing the project as a whole. Both partners put an effort into building a positive relationship and a trustful atmosphere. According to a participating DBG's engineer:

Japanese companies are almost like a family, they took us in and were very nice to us. From this perspective, it was very nice working with them. In Japan, they are also better than other Asian people at working on a project together – almost better than Danish people. They have this special way of working when they all together are trying for the project to succeed. (R&D engineer at DBG, interview, 2 March 2010)



The nature of all the collaboration required that DBG's technology was disclosed to the partner. DBG's had its technologies protected with patents in all relevant markets, and this strategy has proven to be effective. No issues were encountered in this aspect. Furthermore, DBG had an initial trust toward the partner because it always entered into alliances only with well-reputed companies or with the ones where they knew the management well.

The NPD part of the collaboration was successful. Both chips were successfully developed up to the original specifications. DBG's chip was put to use in its standard and customized products and was sold separately. The development period had stretched for three years instead of two, but the products came out technologically successful and timely for the target markets. The partners did not regard the time delay as problematic. However, MNE1 experienced a disappointment in its sales of the chip: its design required a number of external components and specific engineering skills. The chip was not a Plug&Play solution, which would be easy to sell "off-the-shelf", and therefore it was not suitable for the MNE's existing sales channels that offered a large number of Plug&Play chips. MNE1's sales and consequently DBG's royalties came out much lower than expected. Still, based on the learning that the engineers had obtained during the collaboration, MNE1 developed a new independent Class D chip with a more integrated design and a simpler implementation several years later. DBG's experts expected this new product to become a market success for MNE1.

#### **5.4.2 Alliance 2: Developing mobile audio chips in collaboration with MNE2**

Shortly after initiating the first collaboration, DBG developed a simple audio chip for mobile devices. The rather raw prototype was offered to a major Korean global manufacturer of mobile phones (MNE2). It matched the firm's strategic interest in significantly enhancing audio quality in mobile phones, and MNE2 agreed to invest in developing

exclusive audio chips by DBG. This offered the born global an entry into the large and growing mass market of mobile phones. After long negotiations, a comprehensive contract was signed. DBG would participate with engineering resources and know-how. MNE2 would offer engineering resources of two companies in its group, one being a dedicated semiconductor company. DBG would receive royalty for the sale of each mobile phone carrying the chip. Once again, the collaboration's strategic, financial and operational scope was defined clearly. DBG's wide-reaching strategy of spreading its technology into mass electronics products coincided with MNE2's needs. MNE2 was originally introduced to DBG through its mother firm, thus some trust and goodwill existed from the start. Furthermore, DBG's founder managed to convince MNE2's management of the validity of DBG's technologies. The negotiations lasted about six months, and as a result, a comprehensive contract was developed and approved.

This alliance, too, was conducted by means of extensive travelling by DBG's engineers and distance communication. The engineers put a lot of hours into hands-on teaching of MNE2's engineers about working with Class D technology. The communication flows were divided: the top management took care of the business aspects, while engineers handled product development. DBG's technologies were well protected by patents before disclosure. Development of the first generation chip went well, according to the original specifications and timeline. The chip was successfully integrated into several models of MNE2's mobile phones.

Meanwhile, DBG developed its technologies further. 1.5 years after the start of the collaboration, MNE2 agreed to sponsor the development of a second generation audio chip exclusive for MNE2. However, this part of the collaboration did not go as smoothly. The promise to MNE2 could not be upheld within the set timeframe due to the overly optimistic target specifications. Furthermore, the new chip was principally different in technology and would require architectural changes in MNE2's product platforms – something that the firm was

not ready for. As a result, the project was only a partial success. The chips were implemented into several mobile phone models, but neither side was happy with the result. DBG offered to either perfect the chip up to the requirements with one more year of work funded by MNE2, or to develop another chip independently and without any exclusive rights. MNE2 chose the second option, while keeping the imperfect chips.

Building on the learnings gained about the mobile phone market, DBG embarked on the new task - still being a company of around 30 people. The lacking resources and capabilities were compensated by a sophisticated outsourced value chain that stretched across continents. The new chip was finalized 18 months later and came out as a largely technologically successful and a timely product. It was offered to MNE2 but the response was much more hesitant than expected. This was partly due to a change in top management at MNE2's, and partly because the chip did not fit MNE2's requirements precisely.

Clearly, DBG had underperformed in the second stage. Also in this alliance the contract served as the standard for measuring alliance progress and performance. However, the perception of time in this project was different from that in Alliance 1. Here, keeping up with time schedules was highly important due to rapid innovation cycles in consumer electronics markets, the partner's product development plans and competitor action. Conflict resolution in this alliance was based on the contract, but also on flexibility in relation to the actual situation. The nature of the collaboration carried a high level of uncertainty. Therefore, solutions had to be found on the spot using the guidance available in the contracts. As the CEO put it:

It's quite easy: if you promise a customer a product with these specs, and the specs are not there. What will you do? The customer says, 'I have paid you money. I want that.' And there is no book that can say "Page 1. What should I do?" We have to evaluate this particular error, how long time it will take us to correct it. ... I think, especially our contracts with alliances, they are very comprehensive. The deliverables

are stated very-very clearly: what we have to do, what they have to do. Yes, if something is wrong, from a legal point of view it is regulated in the contract. But you will always try to come to terms without litigation. (Interview, 26 March 2010)

In each situation, DBG and the partners tried to find a solution that would be most beneficial and/or least harmful for both of them – in line with “integrative conflict resolution” (Kale *et al*, 2000). DBG did manage to leave without financial penalties after the suboptimal end of stage two, not least due to the management’s negotiation skills.

#### 5.4.3 Alliance 3: Developing an automotive audio chip in collaboration with MNE3

Following a market pull where manufacturers applied DBG’s products in developing automotive audio systems, the firm looked for a partner to develop the first four-channel audio chip for the automotive market. The partner needed to be an established audio supplier that could take part in developing the chip and help DBG to enter this highly competitive market. A well-known Japanese manufacturer of semiconductors for various applications (MNE3) became interested in developing the advanced and energy-efficient chip. After several months of negotiations, a three-party contract was signed. DBG entered with the technical know-how and engineering resources, MNE3 would implement the technologies into a chip. And a third party, a large Japanese automotive audio manufacturer (MNE4) entered as an investor and an exclusive customer for a limited period.

The project was set up in the same way as before, but characterized by a high turnover of managers and engineers at DBG due to the ongoing ownership and management changes. Furthermore, both firms paid inadequate attention to project management and information flows. MNE3 used a new development process for this highly sophisticated chip. It had not been tested previously and turned out to be unsuitable for this development. MNE3 had informed DBG about the new process, but due to the excessive reliance on MNE3’s good name and

technical capabilities, and a lack of project management on DBG's side, the process was not properly evaluated. Furthermore, DBG's original estimate was too optimistic and the target product specifications were very difficult to reach in the planned time due to technology limitations. The firm's Director of Product Development had raised this issue internally several times, but it was not considered. This problem could be attributed to DBG's internal misalignment, which led to a situation where not all the relevant specialists were involved in the project.

While the collaboration began with high interest and dedication from all parties, DBG failed to set up a stable and proper project management team. The deadlines were not met and the management on both sides started to be concerned. DBG's engineers tried to handle the obvious technical challenges through work-arounds. Finally, a thorough project evaluation was conducted by DBG's senior engineers and several serious imperfections were discovered and reported at a meeting with MNE3. A solution requiring more time and investment was suggested, but the product would then be obsolete by the time it would be released. As a result, DBG had to terminate the project and the alliance.

In this alliance, the contract became significant for conflict resolution. At an early meeting in Japan, MNE3 agreed to the project assessment presented by DBG, and that both parties were equally to blame. However later, MNE3 refused to accept this, probably being afraid to 'lose face' in front of MNE4. It took a significant effort from DBG's senior engineers and lawyers before a legal closure was reached. It was concluded that both parties were to blame for the failure and that none of them would pay damages. On top of the lost investments and potential revenues, DBG also lost some of its reputation in relation to two major Japanese MNEs, of which MNE4 was also a customer. One senior manager later reflected on the development:

...we learned several things from this project. You have to be good at project management. We should be better at putting questions on our

partners, question their technology, question their ability to do the project. And we should not make a contract with too many partners, because we have promised [MNE4] to do it, and it was very difficult to stop. It would be much easier to stop the project if we had to deal only with [MNE3] because they had the technical problems with the project. But then we faced [MNE4] – they would lose the market. So we were actually forced by [MNE4] to continue. And we should, at that point, have had the guts to say 'No, this is not ok, [MNE3]. Correct your (faults).' (CTO of DBG, interview, 10 March 2010)

The alliance offered a lot of learning opportunities both from the management and the technical perspectives. However, due to the high personnel turnover, a lot of the project-related knowledge was lost and had to be recovered later by a new team. DBG's inability to deliver results on time was what attracted the top management's attention and encouraged the start of an investigation. A very detailed investigation and evaluation of the alliance's course was made. Dissolution of the alliance happened shortly after a partial ownership and management changes in the firm, and DBG took significant steps into improving its approach and resource allocation to managing collaborative projects after this alliance's suboptimal performance.

#### 5.4.4 A comparative analysis of the alliance management aspects

Table 5.2 summarizes the alliances with regard to the different management aspects discussed in the theoretical part. The pattern is similar in the early phase of establishing the cooperation. The parties managed well in defining the scope of the alliances. Negotiating the specific conditions and writing the extensive contracts usually took time. DBG also succeeded with putting a major effort into identifying the benefits that the MNEs would gain. Alliances 1 and 2 were also similar in the collaboration and communication practices: they were based upon close interaction among engineers and a separate flow of management contacts. Alliance 3 worked less well. It seemed that the change in managers and engineers involved in the project caused

difficulties and undermined the stability and coordination of the alliance.

Table 5.2. Management aspects highlighted in the alliances

Aspect of alliance management	Alliance 1	Alliance 2	Alliance 3
<b>Setting up contributions and expectations</b>	<ul style="list-style-type: none"> <li>• Scope of alliance clearly defined</li> <li>• Benefits for MNE stressed by DBG</li> <li>• Terms set through detailed negotiations and contract</li> </ul>		
<b>Develop collaboration and communication</b>	<ul style="list-style-type: none"> <li>• Clear and stable mgmt teams</li> <li>• Separate contacts by top managers and engineers</li> <li>• Managers with varying roles</li> </ul>		<ul style="list-style-type: none"> <li>• No continuous project mgmt</li> <li>• Rotating specialists</li> </ul>
<b>Trust and commitment building</b>	<ul style="list-style-type: none"> <li>• Technological competence, earlier reputation</li> <li>• Committed engineers</li> <li>• Protection through patents</li> </ul>	<ul style="list-style-type: none"> <li>• Based on existing reputation; personal characteristics in phase 1</li> <li>• Eroded by mgmt changes and weak performance in phase 2</li> <li>• Failure weakened DBG's reputation</li> </ul>	<ul style="list-style-type: none"> <li>• Based on earlier reputation and competence</li> <li>• Internal misalignment</li> <li>• Eroded by weak performance and unrealistic goals</li> </ul>
<b>Conflict resolution</b>	<ul style="list-style-type: none"> <li>• One year delay and early market failure handled well</li> </ul>	<ul style="list-style-type: none"> <li>• Closure through negotiations and without penalties</li> </ul>	<ul style="list-style-type: none"> <li>• Closure difficult</li> <li>• Disagreements about responsibilities</li> <li>• Loss of reputation</li> </ul>

DBG generally relied less on first-hand experiences and more on the earlier reputation of the MNE partners and their status as resourceful and highly respected firms. In Alliances 1 and 2, the engineers' strong commitment and demonstrated technological competences also strengthened the bonds. Nevertheless, DBG made sure that major know-how was legally protected and saw this as necessary in order to fully share important knowledge. In the second phase of Alliance 2, DBG failed to live up to its promises made earlier, partly due to a lack of alignment inside the born global organisation and overly optimistic promises to the partner. A change to a management less committed to

exclusive collaborations with suppliers at MNE2 further weakened the cooperation. Alliance 3 further stresses the negative consequences that came out of overly optimistic promises made by the founder and the lack of consideration of points raised by engineers. Furthermore, change in personnel made it difficult to keep up trust and commitment. Finally, disappointing results led to alliance closure.

All alliances failed to live up to some goals and expectations. In Alliance 1, there were some disappointments regarding the market success for MNE1 and indirectly for DBG. However, these difficulties were solved by the parties without disagreements. In Alliance 2, the problems in phase 2 had more harmful consequences for the promising and profitable long-term collaboration with MNE2. However, there were no disputes and claims made by the parties. Alliance 3 was more problematic and ended in conflicts due to different views upon the parties' responsibilities. It was only after extensive negotiations and contractual disputes that the alliance could be terminated without any further liabilities for DBG. These aspects highlight a number of challenges for a born global if it is to benefit from alliances with MNEs and avoid major problems. In the following section, we discuss the nature of alliance capability from the born globals' perspective.

#### 5.4.5 DBG's learning processes in the alliances

As most small firms, DBG had no dedicated alliance function. Top managers and the founder participated in negotiating and signing of all of the firm's alliance agreements and oversaw their progress. Managerial actions involved a lot of discussion and knowledge sharing. The alliance expertise was developed through managerial heuristics stored with only a few individuals. However, a formal, detailed alliance evaluation was done every time the performance was suboptimal, as in the second stage of Alliance 2 and in Alliance 3. The evaluation was shared with all the participating managers and specialists and the Board of Directors. The top and senior managers continuously and extensively discuss all ongoing projects, and the knowledge is shared both formally and



informally with the rest of the firm. A forum for updating all employees on the ongoing collaborations and projects has been initiated in the recent years in the form of quarterly meetings of the entire organisation. Although no specific manual or other encoded document on alliance management exists, the small size, 'family' atmosphere, and a single location of most specialists provides a natural forum for discussing all ongoing developments. Preservation of alliance management knowledge appears to be a problem, however: if the CEO and the Chief Technical Officer (CTO) decided to leave, a large part of the alliance management expertise would be lost.

## 5.5 Organizational skills comprising the alliance capability

This research supports the view on semi-structured organizational processes as major building blocks of a born global's alliance capability. They emerge over time through experience, organizational learning and development of managerial heuristics in building organizational expertise or organizational skills (Bingham, Eisenhardt & Furr, 2007). The study has uncovered shortcomings as well as strengths in DBG's alliance interactions. All in all, and as illustrated by Figure 5.2, we identify five skills that have contributed to the successful aspects of alliance management and could have helped avoiding some of the problems. These five skills make up the alliance capability and are all proposed to influence an alliance outcome. The research also stresses the importance of learning. We propose that if the firm has no effective learning mechanisms, the alliance capability may have a weaker impact on the outcome. Therefore, learning capability is treated as a moderating factor. Below, we discuss the organizational skills that have shown to be critical for a technology born global, either by being demonstrated by our case company, or the necessity of which has been learnt through the negative experiences and results through a *post factum* reflection.

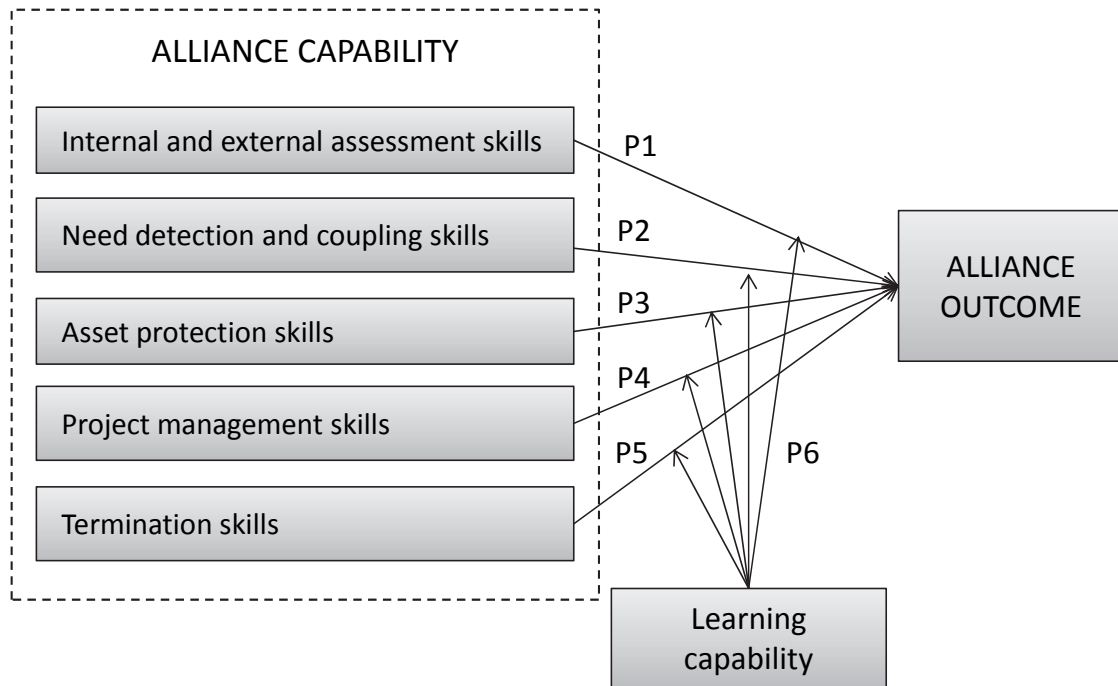


Figure 5.2. Organizational skills comprising the alliance capability

### 5.5.1 Internal and external assessment skills

Our study illustrates that a born global must assess both the potential partners' technological level and expertise and its own capabilities and limitations. Earlier research discusses the need to evaluate the fit between partners before establishing an alliance (e.g. Doz & Hamel, 1998). However, this study points to a more focused assessment skill that stands out as vital for a technology born global. The internal assessment of technical ability to reach target product specifications within a given time is identified as critical. This requires managerial alignment, effective and open internal communication, so that opinions of all experts are considered. Using their limited intangible and tangible resources as effectively as possible and mobilising them synergistically toward a common goal is essential for born globals. For example, it was evident that our case company did not use the full potential of all employees. Some of their unique competences were sometimes disregarded and in one alliance, there was a lack of continuity regarding the people involved. Furthermore, an apparent misalignment of the

firm's management led to ineffective internal communication and to ineffective management of the alliance. The internal assessment skills are an elaboration on the general need for communication and coordination within the organization in support of alliances stressed by, for example, Schreiner *et al* (2009).

Sivadas and Dwyer (2000) stress the importance of finding a partner with complementary goals when entering into an NPD collaboration. The external assessment skills draw upon this, but also highlight a partner's technical ability to contribute to the requirements of an NPD project. Uncritical reliance on the partner's good name, a history of successful developments and assumed technical understanding and resources can be fatal, as Alliance 3 has revealed. Assessing an MNE's technical capabilities is likely to be challenging for a born global, as MNEs are likely to be highly complex and less transparent organizations. Therefore, we posit the following:

*P1: A born global's internal and external assessment skills will be positively associated with the outcome of the firm's alliances.*

### 5.5.2 Need detection and coupling skills

As the less established and resourceful partner, a born global has to present convincing arguments in order to obtain an MNE's interest in an alliance. Gabrielsson and Kirpalani (2004) discuss how large, global firms may search for an SME that can offer complementary services. Therefore, from the born global's point of view, the challenge is to present the MNE with sufficient incentives to collaborate. We highlight the importance of born global managers' and engineers' ability to effectively present innovative technologies and products of their firms (often only prototypes) to the potential partners. Our embedded cases illustrate how the born global was able to detect the needs of the larger partners and assist in fulfilling them and strengthening the MNEs' product portfolios. This requires an in-depth understanding of an MNE's business, product portfolio, and ongoing developments in the

related industries. Furthermore, the born global must couple the needs and strategic directions of the partner with its own resources. Developing a convincing business case beneficial for both the born global and the MNE is critical, as MNEs might have an *a priori* preference for collaborating with large companies that match their resources.

This set of organisational skills involves the skills of a born global's engineers. They can serve as technology advisors to the larger partner, helping engineers to implement the technology in a product application. This requires a superior professional expertise and communication skills that enable engineers from one country to effectively collaborate with engineers from another on highly complex technical matters, in spite of the large cultural and geographical distances. Hence, we posit the following:

*P2: A born global's need detection and coupling skills will be positively associated with the outcome of the firm's alliances.*

### 5.5.3 Asset protection skills

Trust and shared norms is often the main inter-firm governance mechanism (Borys & Jemison, 1989; Moorman *et al*, 1992; Morgan & Hunt, 1994, Parkhe, 1998). Our study illustrates that trust developed over a longer time period may not occur in a born global's alliances. Instead, they may have to develop particularly strong skills in protecting ownership of the technological assets. Contract drafting turned out to be a critical aspect of alliance management. It involves drafting a clear and detailed contractual agreement stating target product specifications, a timeline, resource investments, future distribution of revenues for each party and potential competition issues. All the while, in course of the alliances, contracts need to be flexible enough to show goodwill and trust toward the partner, as well as the technical capability of the born global. Our research shows that the carefully drafted contracts were

used as the benchmarks that successfully guided the alliances and helped to resolve difficult situations.

Earlier research stresses the importance of IP protection (Gassmann & Keupp, 2007; Kitching & Blackburn, 1998). In line with this, the asset protection skills include technology patenting. NPD collaborations involve full or partial technology disclosure to the partner. Therefore, patenting of technologies by the born is necessary to protect its core capabilities and pre-empting possible opportunistic behaviour by alliance partners. This type of asset protection can also ensure that an alliance can develop without further concerns regarding these issues. Therefore, we posit that:

*P3: A born global's asset protection skills will be positively associated with the outcome of the firm's alliances.*

#### 5.5.4 Project management skills

As previously discussed, the literature stresses the importance of effective alliance management (Ireland *et al*, 2000) and of institutional support for the cooperation (Dyer & Singh, 1998). Most born globals will not be able to benefit from a certain institutionalized alliance function that can be responsible for the overall alliance management (Kale & Singh, 2007). Nevertheless, this study clearly illustrates the need for alliance management; but in the form of project management rather than a permanent, institutionalized function. It suggests a need for professional and dedicated project management of technology alliances in order to ensure a desired outcome. In a small firm, finding a dedicated project manager for each collaboration is not always easy due to resource constraints. In our cases, one of the development and senior engineers was also managerially responsible in each alliance. However, this was often suboptimal and led to an unfortunate end of Alliance 3. Development engineers are deeply involved into R&D work and may not have a full project overview or the time to step back and make necessary decisions in critical situations. A project manager responsible

for operational and financial aspects and one not directly involved in R&D work appears to be preferable. Considering resource limitations of born globals, one manager could be appointed to oversee more than one project, depending on the scope. Project management also involves an understanding of various business cultures. The differences affect a project's operations.

We also suggest that prompt detection and collaborative resolution of problems is a critical part. Several of the problems in the studied alliances occurred due to the lack of will or ability to identify them at an early stage. Honest and prompt sharing of information and addressing the issues in a direct and collaborative manner would preempt problem build-up and conflict. Therefore, we posit the following:

*P4: A born global's project management skills will be positively associated with the outcome of the firm's alliances.*

### 5.5.5 Termination skills

The ability to critically analyze and decide when to terminate an alliance appears to be important for born globals. Large firms may have the resources to keep alliances going for many years (Gulati & Sytch, 2008; Parkhe, 2008). Earlier research has also often assumed that termination is a sign of failure (Lunnan & Haugland, 2008). However, a small firm has to make sure that its limited resources are not used on low performing projects. In Alliance 3, the born global's management was not critical enough in the alliance's different stages. Besides the important role of the contract in resolving conflict situations, we emphasize negotiation skills of managers in enabling the born global to leave a collaboration with a minor damage to the firm. It must be remembered that the imbalance of power between a born globals and an MNE is enormous. It is therefore important for the born global to be able to identify ineffective collaborations and terminate them without major losses in terms of money or credibility.

Furthermore, termination concerns the firms' general reputation. Earlier studies stress that reputation and support from earlier network partners is of major importance for born globals (Zhou *et al*, 2007; Freeman *et al*, 2010). It is therefore important to preserve a positive relationship with partner(s) even if a collaboration has been problematic. A born global is likely to have a limited network of relationships and to be dependent on the opinions spread by the partners. We therefore suggest that:

*P5: A born global's termination skills will be positively associated with the outcome of the firm's alliances.*

### 5.5.6 Learning capability

The literature persuasively proves that evaluation of collaborations and subsequent sharing of the leanings with all relevant organizational members contribute to developing a firm's alliance capability (Kale & Singh, 2007; Doz, 1996). Evaluating each collaboration, not only the unsuccessful ones, is important in distilling key insights, sharing them with the rest of the firm, and reflecting upon possible ways of improving the current processes. Encoding this information into manuals and other documents ensures preservation of this knowledge. Finally, when new managers get involved in alliance management, helping them to internalize this knowledge and use it in their work would substantially improve the alliance management processes, help to avoid known mistakes, and eventually lead to better managed and better performing alliances (Kale & Singh, 2007; Heimeriks & Duysters, 2007).

Our study supports the view of learning as an ongoing process (Sharma & Blomstermo, 2003). In born globals, these processes are often informal and depend on a few leading actors. Still, in line with earlier studies (e.g. Hamel, 1991), we find that the level of learning and the ability to consider and share previous alliance experience has a considerable impact on the alliance outcome. Rather than a specific set

of alliance skills, however, learning should be regarded as a generic set of organizational processes within a firm. The literature has discussed how a firm's learning capability supports its internationalization strategy and international growth (Barkema & Vermeulen, 1998; Bartlett & Ghoshal, 2000; Fletcher, 2001). Learning is a basis for many activities, and it influences to what extent the alliance capability will lead to positive results. Therefore, we propose that a learning capability should be regarded as a moderating variable, i.e. a variable that may strengthen or weaken the relationship between the alliance capability and an alliance outcome (Baron & Kenny, 1986).

*P6: A born global's learning capability will have a moderating effect on the relationship between an alliance capability and an alliance outcome.*

## 5.6 Conclusions and implications

Current research emphasizes the need for more empirical and theoretical understanding of born globals, and the importance of external relationships (Freeman, *et al* 2010; Gassmann & Keupp, 2007; Rialp-Criado *et al*, 2010). Numerous authors stress that born globals, due to their rapid internationalization, need to gain and make use of new knowledge rapidly (Chetty & Stangl, 2009; Weerawardena *et al*, 2007). A contribution of our research is an analysis of a born global's alliance capability as a set of skills that enable the firm to fulfil the alliance objectives. It especially highlights the specificities of alliance management by technology-based born globals.

Earlier studies discuss specific advantages that born globals can gain from cooperating with larger and more powerful partners (Cavusgil & Knight, 2004; Gabrielsson and Kirpalani, 2004; Varpalo, 2011). Our study sheds further light on the particular skills that a born global needs in order to balance this type of collaborations. For example, we have found that it is critical for a born global to be able to assess its own, as well as the partners' technical and resource capabilities in order to make sure that the resource and capability endowments of both parties are



optimal for the alliance's objectives. This requires competent project management and a high level of internal alignment among the born global's specialists and managers. We have also found that in order to become an attractive partner for an MNE, a born global needs to develop skills in identifying strategic and technological needs of the MNE and fit the substance of the alliance proposition to it. Besides, the study stresses asset protection skills as essential in guarding the born global's tangible and intangible assets.

The dominant body of alliance research views alliances as long-term processes that usually involve large and resourceful firms based upon trust and mutually shared norms. Alliances are viewed as involving complex organizational structures and pooling of different types of resources (e.g. Borys & Jemison, 1989; Dyer & Singh, 1998; Hamel, 1991; Ireland *et al*, 2002; Parkhe, 1998; Schreiner *et al*, 2009). Our study suggests that for born globals, alliances may have a shorter life cycle. Entertaining several alliances for many years may put too much burden on the firms' limited recourses. The skills to terminate collaborations smoothly at an appropriate time therefore become essential. This also means that trust based on a long-term interaction may not work equally well as a governance form in such alliances. The born globals' alliance capability should recognize this and also take the firms' less powerful position into account. We thus suggest that asset protection skills, including creation of detailed contracts and institutionalized technology patenting practices, are central to building successful business relationships and preserving the firm's core knowledge and independence. The research by Gassmann and Keupp (2007) appears to support this insight in showing that one major challenge for a born global is to protect their intellectual property in collaborative projects.

Furthermore, earlier studies discuss that alliances should be based upon formal routines, definition of responsibilities and governance structures (Doz & Hamel, 1998; Dyer & Singh, 1998). This contradicts some of the very basic competitive pillars of born globals – their flexibility,

limited administrative costs and low fixed cost structures. Our study shows that semi-structured, adaptive processes are the actual basis of an alliance capability of the smaller entrepreneurial firms, and stresses the importance of organizational learning processes in developing the alliance capability. While a specialized alliance management function is out of reach for most born globals, externalizing, sharing, encoding and preserving alliance management expertise is critical for developing a firms' alliance capability and other types of capabilities and spreading the knowledge throughout the organization.

Until now, research on collaborations of born globals has focused mostly on networking strategies, and not on the specific management activities in the firms' alliances in different contexts. Our research is particularly valuable in that it is based on an in-depth process study of a technology born global and the actual challenges and experiences that this firm has faced in managing its collaborations with MNEs. However, we need more qualitative studies in order to evaluate, whether the skills identified here are valid also for other types of born globals. The relevance of the propositions presented here and the impact that different skills actually have on alliance success and the performance of born globals should also be tested using a broader quantitative approach.

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## Chapter 6

# Branding Capability of Technology Born Globals

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### Abstract

Born globals – young, rapidly internationalising small and medium enterprises – face the significant challenge of building an international brand with scarce resources. In this article, we study international brand strategy and implementation of such firms, and define the components of brand value to customers in technology B2B markets, which many born globals operate in. On the basis of the findings, we discuss specific branding capability of technology born globals. A longitudinal in-depth case study of a Danish technology born global has been undertaken. The richness of data collected over 2.5 years (25 per cent of the firm's history) allows for the observing of strategies, activities and discussing related organisational capabilities. We find that superior technologies and the founder's strong brand vision are the enabling factors for building an international brand. Continuous technological leadership

and focused marketing activities lead to customer pull for building an ingredient B2C brand. In our brand value model for technology B2B markets, tangible performance-, price- and distribution-related components have shown to be of the highest importance. The study provides evidence of the possibility of building an international technology brand based on technological excellence and without expensive marketing communication campaigns.

## 6.1 Introduction and problem formulation

Being small and typically poor in tangible resources and having to deal with diverse international environments, born globals – the rapidly internationalising start-ups – leverage a set of fundamental intangible knowledge-based capabilities to reach their international objectives (Knight and Cavusgil, 2004). These firms start with a relatively ‘borderless’ view of operations and develop strategies necessary to achieve their international marketing goals at or near their founding (Knight and Cavusgil, 2004). Born globals’ management is globally oriented, highly motivated and originally commits specific resources to the sale of outputs in different countries.

Researchers have identified a number of organisational capabilities that enable the internationalisation and successful international performance of born globals. Among these are the international capability (Rialph *et al*, 2005), networking and alliance capabilities (Freeman *et al*, 2006; Mort and Weerawardena, 2006), marketing competence (Knight *et al*, 2004), international marketing and entrepreneurial orientations (Dimitratos and Plakoyiannaki, 2003; Knight and Cavusgil, 2004; Kocak and Abimbola, 2009), and the learning orientation of born globals (Kocak and Abimbola, 2009). However, little attention has been paid to branding activities of born globals (Gabrielsson, 2005). Branding is recognised as a source of competitive advantage (Aaker, 2001; 2003; Keller, 2008), which is particularly the case for companies operating in the globalised and commoditised technology B2B markets

(Kotler and Pfoertsch, 2006). Born globals face a significant challenge: they are young, small, resource-limited organisations, facing all the operational challenges of a start-up. Therefore, branding is usually not among the top priorities for the management of these firms. Born globals often lack full-time marketing staff, and in practice often rely on selling, thus limiting their strategic opportunities (Johns and Rowntree, 1991; Oakey, 1991). Neglect of the marketing, especially the branding functions, is argued to be one of the reasons for the failure of small high-tech firms (*ibid.*). Indeed, as the examples of successful technology-based firms, such as Intel and W. L. Gore & Associates show, branding is particularly important for them because it enables the firms to clearly differentiate themselves not only in B2B, but also in B2C markets.

In the situation of increasing complexity of products and constant pressure towards commoditisation, a strong B2B brand adds value to the industrial product, serves as a guarantee of quality, and increases the firm's potential to attract customers and earn their loyalty (Kotler and Pfoertsch, 2006; Kapferer, 2008). There are, however, apparent differences in how MNCs and born globals approach branding. It has taken a long time for MNCs to build strong and recognised brands, whereas born globals have to develop their brands rapidly, which in the situation of limited size and resources requires unconventional approaches (Gabrielsson, 2005). The importance of branding for born globals and specific managerial challenges involved in this process call for special attention by researchers. Yet there are very few studies focused specifically on the branding of born globals (Luostarinen and Gabrielsson, 2006; Gabrielsson and Gabrielsson, 2003; Gabrielsson, 2005). The existing studies explore branding strategy dimensions, such as number of brands, degree of standardisation, push / pull strategies and so on, while specific implementation issues are left untouched. The brand building process with regard to specific steps that these firms undertake and the ways the brand value is created has not yet been studied, thus leaving room for research. The understanding of the brand building process cannot be complete without an insight into the

organisational capabilities that enable a technology born global to build an international brand, or in other words its branding capability. This article aims to fill the identified gaps in theory, and by doing so provides managers of born globals with insights on the actual process of building an international brand with limited resources.

In this study, we aim to do the following: (1) define the specific activities that born globals undertake when building a brand; (2) define the components comprising brand value for customers in technology B2B markets. On the basis of the findings from the first two research purposes, we will address our third purpose: (3) conceptualising a particular branding capability of technology born globals. We discuss these issues in their interrelation and on the basis of an empirical case of a born global that has managed to build a recognised brand in its focus B2B markets, and is well on its way to building an ingredient B2C brand. We particularly focus on technology born globals operating in B2B markets, which is representative of a large number of born global firms (Knight *et al*, 2004).

## 6.2 Conceptual foundations

The phenomenon of born globals first attracted academic attention and was conceptualised in the early 1990s (Rennie, 1993; Oviatt and McDougall, 1994) when rapidly internationalising start-ups began appearing across countries and industries. Born globals are ‘business organizations that, from or near their founding, seek superior international business performance from the application of knowledge-based resources to the sale of outputs in multiple countries’ (Knight and Cavusgil, 2004, p. 124). An operational definition is that these are firms less than 20 years old, which have internationalised within 3 years of founding and generate at least 25 percent of sales from abroad (Oviatt and McDougall, 1994; Zahra *et al*, 2000; Knight *et al*, 2004).

The organisational capability approach has been found particularly suitable for studying born globals (Knight and Cavusgil, 2004; Rialph

*et al*, 2005), as these firms being typically poor in tangible resources, leverage unique, idiosyncratic intangible knowledge-based capabilities in order to rapidly internationalise and stay competitive in their diversified markets. *Knowledge* is said to be a firm's single most critical resource (Grant, 1996b). In the Knowledge-Based View:

Integration of specialist knowledge to perform a discrete productive task is the essence of organizational capability, defined as a firm's ability to perform repeatedly a productive task which relates either directly or indirectly to a firm's capacity for creating value through effecting the transformation of inputs into outputs. Most organizational capabilities require integrating the specialist knowledge bases of a number of individuals. (1996, p. 377)

There has been discussion, as well as confusion, about definitions of an organisational capability in the literature (for example, review by Dosi *et al*, 2000), but after a thorough literature review of the frameworks underlying the capability concept we have chosen to follow Grant's (1996a) definition and framework, as they are in line with numerous other definitions and capture the essence of competitive advantage of organisations in a way that is closest to our own understanding, arrived at after extensive empirical work and theory review.

Marketing is essential for the success of born globals. Interestingly, it has been placed by researchers on different levels of analysis. Dimitratos and Plakoyiannaki (2003) discuss international marketing orientation as one of the dimensions of born globals' international entrepreneurial culture. Knight and Cavusgil (2004) place international marketing orientation separately and on the same level as the international entrepreneurial orientation as the factors underlying international performance of born globals. Kocak and Abimbola (2009) argue that the entrepreneurial and market orientations are equally important *capabilities* of born globals. In combination with learning orientation and an autonomous organisational structure, they underlie innovativeness of born globals and lead to their successful international performance. Knight *et al* (2004) emphasise the importance of

marketing competence. In all cases, marketing capability or competence has been given a highly prominent role in the international performance of born globals. Branding represents an essential part of marketing strategy of born globals, but it has not received sufficient attention in the literature. We have located only one study focusing on branding strategies of born globals (Gabrielsson, 2005), and two studies touching upon branding as part of born globals' marketing strategies (Luostarinen and Gabrielsson, 2006; Gabrielsson and Gabrielsson, 2003). Luostarinen and Gabrielsson (2006) suggest that born globals develop different approaches to branding compared to gradually internationalising companies as they have to develop a global brand from the very beginning. The study by Gabrielsson (2005) demonstrates that B2B and B2C born globals differ in their branding strategies, but are characterised by common success factors: experience and motivation of their founders and global orientation from the beginning. The major finding is that branding strategies are dynamic and depend on the degree of globalisation. Although extensive, this study takes a snapshot perspective of branding strategies by companies at different phases of brand building. Thus, the brand building process and specific implementation issues are left outside the discussion.

As the literature on branding by born globals is very limited, it can be useful to look at relevant concepts in B2B branding, as a large percentage of born globals are technology-based and operate in industrial markets. It is argued that branding plays as important a role in B2B as it does in consumer marketing (De Chernatony and McDonald, 2003). B2B markets particularly suffer from the risk of quick commoditisation prompted by globalisation forces. Hence, branding one's marketing offering is critical in B2B markets. Branding can build differentiation for offerings that have highly similar core products, and achieve identity and preference with the customers' customers (Anderson and Narus, 2004). B2B brands are said to deliver advantages similar to those of B2C brands: improved perceptions of product performance, greater customer loyalty, less vulnerability to competitive marketing actions and crises, possibility of larger margins

and so on. (Kotler and Pfoertsch, 2006; Keller, 2008). However, as noted by Ward *et al* (1999), many managers in high-tech B2B markets believe branding to be unimportant because of the rational behaviour of organisational buyers. Managers often focus on the functional capabilities of their brands to guarantee their quality, which leads to the slow brand evolution from a commodity to a 'reference brand' in Goodyear's (1996) consumerization spectrum. Ward *et al* (1999) call for a change in managerial attitude from a 'product-centric' to 'promise-centric' model. As argued, industrial brands can successfully compete on the emotional level as organisational buyers seek not only product performance, but also emotional aspects such as prestige and the feeling of security (De Chernatony and McDonald, 2003). The literature highlights the importance of industrial brand names for the creation of strong product identity, image consistency, and ultimately marketing success of industrial firms (*ibid.*). The importance of brand name is also reflected in the definition of an industrial brand: 'a name considered by industrial players as an indispensable reference in conjunction with a particular need'. (Kapferer, 2008, p. 113).

Industrial marketing literature contributes to understanding the sources of brand value in B2B branding. Mudambi *et al* (1997) have developed a framework for identifying sources of industrial brand value to customers. Brand value is a function of expected price and expected performance of four components: product, distribution, company and support services, each of them, in turn, consisting of tangible and intangible components. In their 'pinwheel' model, the authors stress the inseparability of tangible and intangible values in customers' minds. Subsequent research based on this framework demonstrated the special importance of intangible product and company attributes in adding value to the industrial brand (De Chernatony and McDonald, 2003). On the basis of our empirical study, we will further develop the model of Mudambi *et al* for application to *technology* B2B markets in addressing our second research purpose. We will then combine the findings from our first two research purposes to begin conceptualisation of a particular branding capability of technology born globals based on



the routines / activities that resource-limited born globals undertake in their international brand building processes, and the direction of these activities set by the brand values to customers in industrial technology markets.

## 6.3 Method

In order to study strategy implementation and actual process of brand building, we have conducted a longitudinal case study of a Danish technology born global Bang & Olufsen ICEpower (further 'ICEpower'). The firm is an independent subsidiary of Bang & Olufsen Group (B&O). Over the 10 years of its history, ICEpower has managed to become the reference brand in some of its application B2B markets, build a positive international reputation and brand in other markets, and is actively building an ingredient B2C brand.

Although the relation to B&O reflected in the name has certainly given ICEpower trust and legitimacy in the eyes of potential customers, our study has shown that this only applied in the original stage of customer contact. ICEpower's business is quite different from that of B&O: the firm develops B2B audio amplification solutions, the 'heart' of various audio applications – and not high-end consumer audio and video products as B&O does. ICEpower's B2B marketing channels are completely different from those of B&O, and in some segments ICEpower markets to B&O's competitors, which precludes utilisation of the B&O brand. Furthermore, in some countries, that is, the United States, reference to B&O hardly gives any leverage as B&O does not have a strong market position there. We would argue that Denmark's international reputation as a country with some of the world's leading know-how and education in audio power electronics and electro acoustics would have played the same role for any Danish company in these technology fields as B&O did for ICEpower, or if ICEpower did not have B&O in the name and was simply a start-up company from Denmark.

In any case, after the initial contact where the B&O name may allow ICEpower to convey an early positive image to potential customers, ICEpower has to prove its worthiness to a customer with the quality of its technologies and products, like any other firm. Therefore, we argue that learnings from this case study are analytically generalizable and valuable for any technology born global operating in B2B markets. We have chosen this particular case company because it is a rather unique case of a non-internet-based B2B business, which has been implementing a successful international branding strategy from its very establishment without employing expensive marketing communication campaigns.

The data have been collected over 2.5 years of participant observation at ICEpower, thanks to the learning partnership setup of the first author of this article as an 'industrial PhD student' with the firm. The author's insider position allowed her to collect the unique data in its complexity, otherwise unavailable, cross-check its validity and build up the chain of evidence (Dingwall, 1997; Yin, 2003). Many different sources of evidence have been used allowing data triangulation (Yin, 2003). Numerous discussions with the engineers and management, review of company and industry publications, and intimate acquaintance with the firm's business and markets have been completed by semi-structured interviews with the firm's founder, management and other customer-interacting employees.

According to Alvesson (2003), interviews are complex social events and arenas for construction work. By reflecting the sense-making process of participants, they provide rich interpretations of the branding phenomenon. As only internal stakeholders were interviewed, we lack the data on external stakeholders such as customers and business partners. Although providing a possible bias, our approach allows for an integrated view based on extensive everyday customer contact, expert knowledge of target markets and customer preferences of the interviewed ICEpower managers. In addressing our second research

purpose, measurement of relative importance of each brand value component to industrial buyers was outside the scope of this study.

## 6.4 Case study and analysis

In this section, we present our findings and their analysis, organised according to our research questions. We start with a short introduction of the case company.

Bang & Olufsen ICEpower is a technology-based Danish born global, spun off from B&O in 1999. In fiscal year 2007 – 2008, ICEpower had the revenue of 117 million DKK and a profit of 25 million DKK. The company internationalised within 1 year from establishment and acquired customers and collaborative product development projects in Europe, the United States and Asia. The company was founded jointly by B&O and Dr Karsten Nielsen based on Dr Nielsen's patented findings from his PhD thesis on Class D audio amplification, which delivers significantly higher efficiency compared to traditional analogue technologies. ICEpower started off with high-power audio amplifiers, and eventually expanded into four application markets: consumer and professional audio, home theatre, automotive audio systems, and audio ICs (chips) for portable audio applications (mobile phones, notebooks).

### 6.4.1 Research Purpose (RP) 1. Defining specific activities that born globals undertake when building a brand

To give an overview, we have summarised ICEpower's brand building strategy and activities in Figure 6.1, and divided them into three stages. We have defined particular enabling factors that preceded ICEpower's brand building strategy and its implementation. We will first discuss these, and will then turn to specific activities.

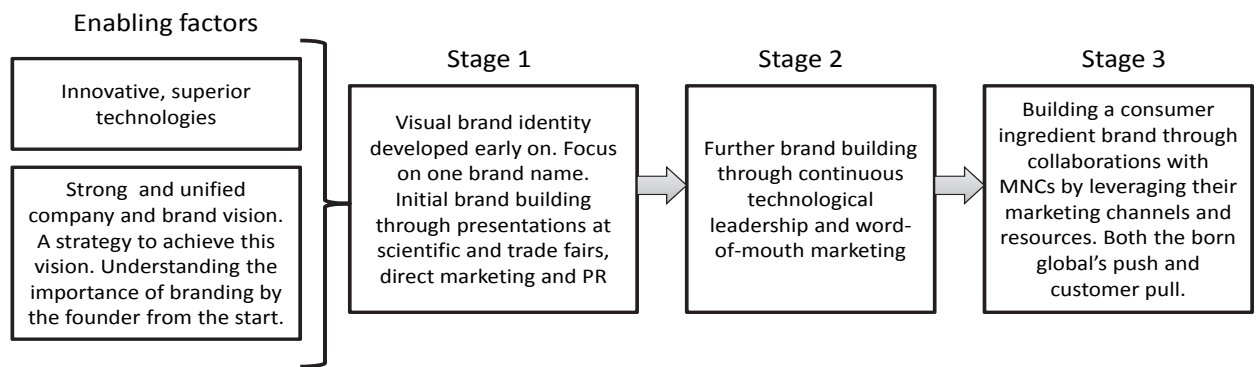


Figure 6.1 Stages and activities in building ICEpower brand

### Big vision from the start

The founder, a highly entrepreneurial person, had a very clear vision for the company and its brand from the start. The vision for the company was ‘to make 100 per cent efficiency revolution and become the standard in every audio appliance by offering a much more efficient, better sound in every device’. (Founder, interview, 26 August 2009) This is a highly ambitious vision considering that today’s most efficient audio devices work at average 10 per cent efficiency.

The vision for the brand was as clear: ‘to become the Intel of audio’, which the founder openly and persistently expressed. As he puts it:

We had a fairly clear vision. We had the technology platform – I knew it was strong. I had been talking to potential customers during my PhD ... The question is: ‘Why not?’ [referring to his vision of becoming the standard ingredient for all audio products] Just give me one reason why not, if correctly executed. (Founder, interview, 26 August 2009)

### Brand strategy to achieve the “Intel vision”

The founder’s strategy for achieving his vision of becoming the standard core of every audio product consisted of two parts: first, to maintain constant technological leadership and thus ‘kill the competition’.

Technology should continuously improve, and we should position ourselves strongly toward the competition. Kill the competition. ...

Just spinning the wheel faster and smarter than everybody else. ... Because that enables the possibility to have *substance* in the brand.

It's having the best technology platform for reproduction. ... If ICEpower is that, the technology and products will spread quickly. (Founder, interview, 26 August 2009)

Second, to use the marketing resources and channels of ICEpower's customers, large original equipment manufacturers (manufacturers of mass consumer products), as the vehicles for communicating the ICEpower brand.

The strategy on the brand side was to go in and have the customers finance it through co-marketing. You take [co-brand with] one company, then second company, you build some muscle, then you start enforcing the brand to the customers. But still, having them finance the whole communication through their media, through their press channels. The leverage you get on all those big customers is enormous. (Founder, interview, 26 August 2009)

Hence, *the enabling factors* for building an international brand by ICEpower have been its leading technologies in a particular field, and the founder's exceptionally strong and unified vision for the company and the brand. Presence of a strategy to reach the vision and its implementation from the very establishment of the company were equally important.

*The first stage* of ICEpower's brand building strategy consisted of the following activities:

### Naming the company and products

The founder named the company Bang & Olufsen PowerHouse, whereas the technology and products were named ICEpower. This was done in pursuit of a larger vision of eventually having several business divisions. After receiving customers' feedback about confusion over the two brand names, the products and the company were brought under

one brand, ICEpower, and the company was renamed Bang & Olufsen ICEpower in 2001.

When asked whether he utilised the B&O name in his negotiations with customers, the founder said that he always tried to promote ICEpower and make as few references to B&O as possible. B&O's name was always in the background, giving customers security that they were dealing with a respectable company producing quality products. It was clear, however, that ICEpower had to be promoted as an independent brand and company, as its products were completely different from those of B&O. It was problematic to market ICEpower products to B&O's competitors or to offer them to mass-market applications, where B&O suggests association with above-premium prices.

### Visual identity from the start

Already during the first years of the company, Dr Nielsen had a visual identity, clearly distinct from B&O, developed for ICEpower. A website and a series of branded marketing materials followed. In 2007, the company updated its visual identity to a more distinct look (see [www.icepower.dk](http://www.icepower.dk)) meant to portray ICEpower's engineering nature and Danish origin.

### Initial promotional activities

Initial brand building of ICEpower was achieved through attending trade fairs, carrying out PR activities, direct sales and word-of-mouth marketing. From the late 1990s to the early 2000s, Class D technologies were a hot topic in the audio industry. The principles behind these technologies had been known for decades, but no one managed to bring their audio performance to the Hi Fi level. Dr Nielsen had already made a name for himself in international scientific and related engineering circles during his PhD work. With its first products, amplifiers of extreme power levels, ICEpower first targeted the professional audio makers – the early adopters of new technologies.

To reach this target group and start building its brand, ICEpower held audio demonstrations with its products at the Audio Engineering Society conferences. Attending the largest consumer trade shows proved to be effective in reaching consumer audio manufacturers. At the International CES (the world's largest Consumer Electronics Show) in 2002, ICEpower became the technology of the show, and received a lot of publicity in the Japanese, American and European media, prompted by Sony's use of ICEpower's amplifiers.

The founder and his small team were actively promoting their products through direct sales: customer visits with product demonstrations. Dr Nielsen made a lot of marketing visits to Japan, and 3 years into the company's history ICEpower signed a co-development contract with Sanyo, where Sanyo's marketing channels would also be used to sell ICEpower chip-based amplifiers. On Dr Nielsen's initiative, ICEpower received a lot of publicity through the channels of its Japanese customers:

We came to visit Yamaha in 2002 – 2003. They knew us very well. We made an alliance with Sanyo, and Sanyo makes a marketing event every year where I was standing and talking to 200 Japanese. So suddenly, every company in Japan knew us. (Founder, interview, 26 August 2009)

The founder was also active in PR in Denmark: ICEpower got coverage from leading publications helping to raise the awareness about the new company in its home country.

*In the second stage*, ICEpower focused on building a reputation in its B2B markets through product and technology excellence, successful collaborations with customers, and promotional activities.

## Building reputation through word-of-mouth marketing

Acquiring an increasing amount of satisfied customers, the ICEpower brand was being built and was gaining momentum through word-of-mouth marketing in B2B markets. The founder stressed the importance of word-of-mouth reputation building for a new company, which gives it legitimacy in a new market. He also stressed the importance of gaining customers' trust towards the core team of a new firm. Three-year old ICEpower signed a large product development and marketing alliance with Sanyo based largely on paper and electronic presentations. The story was similar with Samsung TN the following year: an even larger deal was signed based on presentations and technology demonstrations and a very raw product prototype. Samsung agreed to fund development of an ICEpower amplifier chip exclusively for several generations of Samsung mobile phones. This deal ensured several years of organic development for ICEpower, crucial for a start-up to survive and establish itself in its markets.

The founder also stressed the importance of branding as a tool for shortening the sales cycle – the time from initial customer contact to the actual sale or signing of contract.

## Promotional activities

According to the founder, owing to the team's proactive promotion efforts (direct sales, presentation at trade fairs, PR), the ICEpower brand had become internationally known and accepted in some markets even before some of the products were ready. Product development takes time, years in fact, whereas the vision and target technical specifications of future products can be presented in advance.

*In the third stage*, ICEpower began building a consumer brand. The firm's continuous technological superiority and the high professionalism of its employees built a positive reputation in the industry. Seeing the significant value that ICEpower ingredient products add to end products, customers began offering to use



ICEpower's ingredient products and technology as branded differentiators to position their consumer products against competition. ICEpower collaborates on marketing communication activities with its customers, and the majority of the costs are covered by the customers.

The importance of a strong vision for a company and its technological leadership have shown to be particularly critical for technology born globals – both in our study, and in previous studies (Knight and Cavusgil, 2004; Rialph *et al*, 2005). However, our study shows the equal importance of the vision and strategy *for the brand* of the newly established venture – as the guiding mechanism for the firms' technology strategy and as a means for building a name and reputation in its focus markets. ICEpower's strategy closely resembles the one discussed by Moore (2006) as 'crossing the chasm' with a new technology to a mainstream market. Having acquired customers among the early adopters in audio markets – Hi Fi and professional audio product manufacturers – ICEpower leveraged these references to land a groundbreaking deal with a mass market customer – Samsung. Throughout the process, ICEpower was careful to make the most of its customer collaborations for building its brand and leveraging every possible channel – whether its own, or that of its customers, to promote its brand. As the visions of the brand and the company were strong and unified in the founder's mind, the communication effort was consistent and relatively strong, although without significant financial investments by the born global. This strategy could be set as one possible best practice example for technology born globals.

The key point in developing a new venture is having a strong vision and strategy for its *independent* brand, and making sure it is promoted. Negligence of brand building leads firms, even with groundbreaking technologies, to never becoming independent companies or brands and being purchased by larger companies. This, for example, has happened to ICEpower's competitor in the early years, Toccata Technology. The company originated from the same university department and was successful at about the same time as ICEpower – so successful, in fact,

that it was purchased by Texas Instruments. The brand Toccata never matured, and now the firm is one, although a valuable one, of many departments at Texas Instruments.

ICEpower's brand strategy has proven highly successful: it managed to build a recognisable brand in each of its target markets. On the basis of mass media reviews, ICEpower is regarded to be among the world's leaders in switching audio power amplification. In 2007 – 2008, ICEpower was among eight amplifiers that account for over 50 per cent of the international mobile phone market.<sup>1</sup> In the consumer audio sector, Pioneer Electronics uses ICEpower as the main marketing differentiating tool for their award-winning Elite audio / video receivers for home theatre. In high-end consumer and professional audio, ICEpower has become the reference brand for switching audio amplifiers, which is clearly observed on online forums, such as at [www.audioholics.com](http://www.audioholics.com)

#### 6.4.2 RP2. Defining the components of brand value to customers in technology B2B markets

In our empirical study, we have applied the framework of Mudambi *et al* (1997) to define the components of brand value to customers in technology B2B markets. Our findings, however, do not suggest that all the tangible and intangible qualities mix in the customers' minds. Some of the components are clearly more important than others. We, therefore, have developed the brand value model particularly for technology B2B markets. Our findings are presented in Figure 6.2.

As an example of our interviewees' responses, ICEpower's CEO gave the following explanation of his understanding of what a brand stands for in ICEpower's B2B markets:

I think a brand in ICEpower's markets has some tangible and some intangible elements. What our customers look for is more the technology, the specification, the craftsmanship, the reliability and quality – all the things related to the solution [the product]. But then,

of course, they also look at the intangible things: is it a healthy company financially? Some big companies would say: ‘Ok, you are going to have two of our most critical products. Can you deliver?’ Our solution is not easy to substitute with another. So on the intangible side, they consider the healthiness of the company, our ability to deliver, and all the things that are more related to the operations. That, I think, will create what is really a brand for our customers. (Peter Sommer, CEO, interview, 4 November 2008)

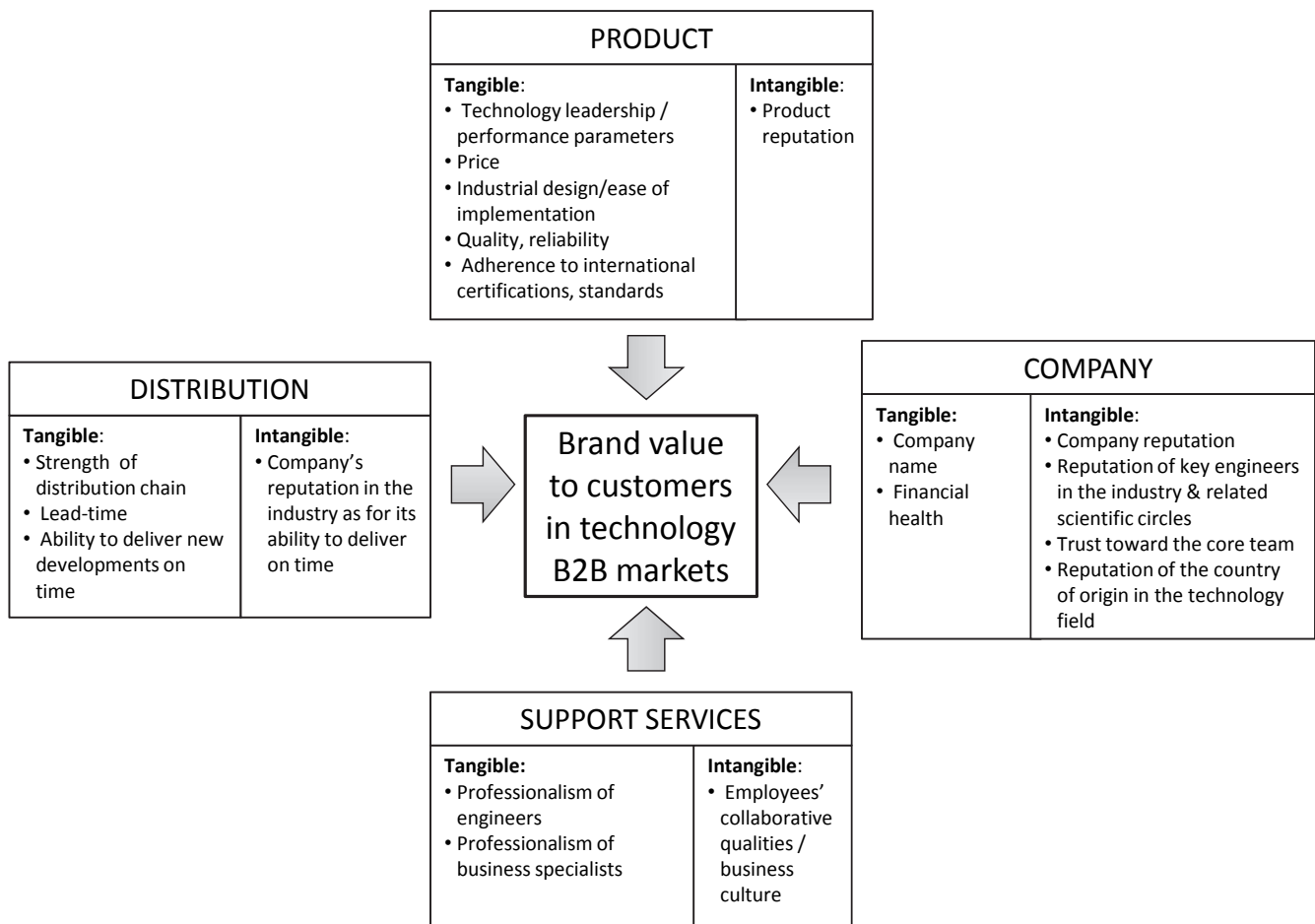


Figure 6.2 Components of brand value to customers in technology B2B markets

Inspired by the Pinwheel of Brand Value to the Customer, Mudambi *et al*, 1997

*In the Product category:* The *technology leadership / performance parameters* component was stressed as the most important. *Price* followed next – owing to the commoditised nature of electronics mass

markets. Our study shows that in technological B2B markets, *the tangible technological qualities* matter most, although an offering must be competitively priced. The following quote illustrates this:

The volume customers will not accept the price penalty: they will take all the benefits: being green, and better, and design freedom, but the price has to be comparable. (Dr. Nielsen, interview, 26.08.2009)

*Industrial design / ease of implementation* is important for ingredient high-technology products, particularly for those carrying novel technologies. One of the reasons why Class D technologies had not been widespread previously is the difficulty of implementing them into audio products. This brand value component is particularly critical in portable electronics products owing to significant space limitations. *Quality* and *reliability* are self-evident brand value components, supported by findings in other studies (Mitchell *et al*, 2001). *Adherence to international certifications and standards*, while necessary in all markets, is particularly emphasised in the automotive sector (one of ICEpower's focus markets) owing to its strict safety regulations. Not every supplier is able to meet these standards. Another type is quality certifications, such as THX for home theatre, which, although not required, serve as a quality stamp for particular types of products. Finally, *product reputation* is a major brand value component. Engineers worldwide communicate through online forums and professional conferences, and information about performance of a company's products spreads quickly.

*In the Distribution category: Strength of the supplier's distribution chain* was stressed as third in importance across all categories, after the technological leadership / performance parameters and price, and second in relation to chip-based products. This is caused by the need of mass electronics manufacturers to ensure stable component supply, as any break in supply leads to high revenue losses. *Lead time* – the time a firm needs to develop or customise a product affects the customers' product development and rollout processes. This brand value component contributes directly to another, intangible component of

*the company's reputation in the industry as for its ability to deliver on time* – an important contributor to a firm's brand value for customers in B2B.

*In the Support Services category:* *Professionalism of engineers* has shown to be highly important. Although 'professionalism' has intangible connotations, in technology environments, engineering professionalism becomes a tangible quality, resulting in the quality and performance of products. This refers both to component products, and how well these are integrated into end products. *Professionalism of business specialists* has also been indicated as important in developing beneficial business relationships for both the supplier and the customer, as well as for collaborative marketing activities. The intangible quality of *employees' collaborative qualities / business culture* is an important enabler for carrying out fruitful customer relationships. This component contributes to brand value at every point of customer contact.

*In the company category:* The *company name* and *financial health* have shown to serve as guarantors of quality of products and reliability of the supplier. Among the intangible components, *company reputation* and *reputation of key engineers in the industry and related scientific circles* have shown to be of high importance for establishing a brand in a market. These findings corroborate numerous other literature on the importance of corporate reputation for small and medium enterprises (SMEs) (Goldberg *et al*, 2003; Abimbola and Kocak, 2007). *Reputation of the country of origin in focus technological field* speaks about the importance of the strong engineering tradition and education in particular countries for particular fields (for example, Germany in automobiles and industrial machinery, Denmark in switching audio power electronics and electro acoustics). Finally, *trust towards the core team* revealed to be of high importance in new product development projects, especially during the early years in a firm's history. Technical drawings and projections, and rarely – a raw prototype, is all that a young company usually has to show when pitching for a collaborative development project with an established partner.

On the basis of extensive participant observations and discussions with the engineers, we have reasons to believe that the brand value model that we have developed can be considered as the brand value formula in technology-based *electronics* B2B markets. Each particular application market may have its own specific components, but we believe that we have distilled the core components of brand value to customers, regardless of whether it is for a born global or for a larger company. However, it would be a mistake to claim generalizability to other types of technology B2B markets, such as, for example, power plant equipment. Some of the brand value components will remain, but some will be different. In electronics markets, the tangible brand value components of technology leadership / performance parameters, price and strength of the distribution chain have shown to be of utmost importance. These are followed in importance by the combination of tangible components of company name, financial stability, professionalism of engineers and the intangible component of company reputation. Other components have also been important, but our research has clearly shown that the *tangible components* are by far the most important in comprising a supplier's brand value in technology B2B markets. In the end, it is the product that the supplier delivers, its performance, timeliness and reliability of delivery and the engineers' professionalism – all closely interrelated – that matter both for the company's success and its positive brand image in the industry.

#### 6.4.3 RP3. Conceptualizing the branding capability of technology born globals

Combining our findings for the first two research purposes, we would like to open a discussion on the branding capability of technology born globals. We have shown the activities that our case firm has undertaken to build an international brand; we have also defined the brand value model in electronics B2B markets. Building on these findings, we would like to discuss which organisational factors, strategies and mechanisms enable a technology born global to build an international brand, and thus comprise its branding capability.

Following Grant (1996a), organisational capabilities are mechanisms for integrating expert, often tacit knowledge of individuals. Capabilities are hierarchically structured according to the scope of knowledge they integrate. Higher-level capabilities integrate lower-level capabilities. The primary integrating mechanisms are direction and routine. Applying the framework to our empirical study, we will now formulate the branding capability of a technology-based born global and the capability's mechanisms.

*Direction:*

- *Strong vision for the company and brand and a strategy to reach the brand vision* by the founder / the core team. The strong vision of the founder gave *direction* for building the firm and a wholesome brand. The founder's vision of the brand also served as a *delineating* and *differentiating* factor for the firm in designing its products and market offerings, and keeping them focused on and aligned with the vision.
- *The objective of technological leadership.* The goal of technological leadership sets the direction for the firm's development, and is closely related to the brand value components of technological leadership / performance and professionalism of the engineers, as being some of the most important in technology-based B2B markets.

We believe these findings to be analytically generalizable to other born globals, as it is difficult to imagine that without a far-reaching vision, a strategy to achieve it and a substance to the market offering, a brand can be built.

In our analysis, ICEpower's branding capability has shown to be a rather high-level capability. It builds on a number of other capabilities, which in turn are based on established organisational routines. For our current purpose, we will remain on the capability level of discussion.

- *Technological capability* – it certainly is a much bigger notion than a factor in a firm's brand building strategy. It is the basis for a firm's existence. Yet, it is critical to branding as it gives *substance* to a technology brand. The technological capability is closely tied to the firm's objective of technological leadership – a direction element: a firm's technological capability is the implementation of the necessary organisational routines to reach this objective. The capability incorporates the firm's internal and collaborative R&D processes, personnel selection practices, internal product development procedures, sourcing procedures and numerous other activities. A very important result of this capability is the ability to design high-performance products at competitive prices.
- *Collaborative capability* – a firm's ability to carry out fruitful collaborations with its partners, beneficial for all the parties. As discussed in our findings, the collaborative qualities / business culture of a firm's employees are important brand value components in technology B2B markets. Collaboration in high-technology environments happens on a close, detailed level. Engineers from different organisations collaborate daily on a large number of issues. Hence, it is difficult to imagine that collaboration may result in a successful product, or a beneficial brand image, if the collaborative processes / qualities of the partners are in significant disagreement or are inadequate.
- *Marketing communications capability* – these are feasible marketing communication activities that a company undertakes to promote its brand independently, as well as in collaboration with partners. Our study shows that these activities need to be managed by at least one dedicated person who thinks strategically and acts proactively in implementing the brand building activities. If the component product / technology is considered valuable for



consumers, the born global's B2B customers will present possibilities to communicate the component brand. Hence, the born global needs to be proactive and needs to make sure to take full advantage of these possibilities. PR activities are also important: PR is a high-leverage and low-cost instrument in technology markets if channelled through the right publications respected by the target B2B or B2C audiences. Finally, a dynamic website needs to be kept up-to-date with all the relevant information for all the target audiences of the born global. Currently, the web has become the primary means of communication about products and organisations.

## 6.5 Conclusion

In this study, we have attempted to open the black box of activities and strategies that enable born globals to build an international brand. First of all, our empirical study has shown that it *is* possible for a young SME to build an international brand, both a B2B and an ingredient B2C brand. A strong and unified vision for the company and its brand by the founder / management has shown to be of the utmost importance. By expanding the framework of Mudambi *et al* (1997), we have developed the model of brand value for customers in B2B electronics markets. The tangible components of technology leadership / performance parameters, price and strength of the distribution chain have shown to be of the highest importance, followed by the company's name, financial stability, professionalism of engineers and the intangible component of company reputation. Unlike the framework of Mudambi *et al*, our study suggests that the components *do not* mix in the minds of industrial customers in technology markets – the tangible components are clearly of higher importance than the intangible ones.

We have followed the brand building strategies and processes of our case company from its establishment until the present day over a period

spanning 10 years. Having defined the brand value model in relevant markets and the corresponding strategies, and having researched the activities, we have begun a discussion on the *branding capability* of technology born globals. This has shown to be a rather high-level organisational capability. It is directed and enabled by the strong vision for the company and its brand by the founder / core team, a strategy for reaching the brand vision, and the objective of technological leadership. The branding capability of technology-based firms is built on their other capabilities – the technological, collaborative and marketing communications capabilities. Each of the capabilities are vast in their own right, but our research shows that without them, a technology born global's branding capability is hardly possible. The technological capability gives content to the brand and the basis for its existence in technology markets. The collaborative capability enables fruitful collaboration between the firm and its customers and partners, and hence builds the firm's reputation in its markets. The ability to build fruitful and continuous relationships with partners is a valuable skill that, aside from other benefits, affords new marketing opportunities for the born global. Finally, the marketing communications capability is crucial in implementing the firm's intent and ambition of building an internationally recognised brand.

Our study has three distinct contributions. The first contribution is in showing that in technology B2B markets brand building is mainly based on the 'substance', the product's tangible qualities: customers focus on the performance parameters, price, quality and reliability of distribution channels, rather than on a positive brand image of a firm. This contradicts the existing B2B and B2C branding literature, which is rich in discussions of the value of building intangible brand aspects and creating a positive brand image through marketing communications. Our second contribution is in discussing the actual activities for implementing an international brand strategy, starting immediately from a firm's establishment: existing studies emphasise the value of brand building for firms, but do not discuss how a young and resource-poor firm can actually do this. Our third contribution is in presenting

an example, and hence providing evidence of the possibility of building an international brand without massive marketing communication campaigns by a firm. Overall, we believe that we have started an interesting discussion and hope that other authors will pick up on it and elaborate on the possibilities of brand building in today's changing business world.

### Practical implications and suggestions for further research

We believe that valuable avenues for further research would be to continue studying the strategies that born globals adopt for overcoming their resource limitations in various aspects of their operations. Further, we suggest that the discussion of the born globals' branding capability needs to be continued. In addition, more research is needed on branding in technology B2B environments. This research should also provide valuable insights for managers of born globals in enhancing their understanding of (1) the importance of branding, and (2) possible brand building strategies and activities with limited resources.

NOTE: 1 Research & Markets, Mobile Audio IC Industry Report, 2007 - 2008.

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## Chapter 7

# Managerial Capability of Technology Born Globals

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### Abstract

This article identifies and discusses the key aspects of the *managerial capability* of technology born globals, which is viewed as having the potential to underlie international competitiveness of such ventures in the long term. The article builds on the knowledge management and international entrepreneurship literature. Specific aspects of the managerial capability are identified and discussed by analyzing the history of a successful technology-based born global, different stages in its development, the challenges faced, and actions of the main actors in their resolution.

### 7.1 Introduction

Rapidly internationalizing new ventures have become an integral part of the international business landscape. These firms employ the latest advances in technology and communications and the international business experiences of their leaders to rapidly internationalize their business activities to different regions of the world, find international partners, and set up international sourcing and outsourcing chains for their products and services (Freeman *et al.*, 2006; Burgel & Murray,



2000; Shrader *et al*, 2000). In short, born globals have changed our understanding of operations of newly established ventures and have challenged the established theories of slow and step-wise internationalization (Oviatt & McDougall, 1994; Madsen & Servais, 1997).

The vast majority of literature on born globals has focused on the early stages of their development: their establishment process and rapid internationalization. The literature (Knight & Cavusgil, 2004; Knight & Kim, 2009; Mort & Weerawardena, 2005; Freeman *et al*, 2006; etc.) has studied various capabilities and strategies that enable rapid internationalization of start-ups and how they compare to the traditional internationalization theories. However, how about further years in a born globals' development: which capabilities enable their long-term development and growth once they have passed the initial commercialization and internationalization stages? How are they related to the capabilities developed during the firms' early establishment years? What are the critical challenges that these firms face after their initial internationalization phase, and how are they overcome?

Markets change, and technology markets where many born globals operate, change even faster. The flow of information is more open today than ever before, and any profitable market niche quickly attracts competition. Larger competitors catch up on the first-mover advantage, originally used by a born global to enter a specific international market niche. Hence, a born global, just like any other type of firms needs to continuously redefine itself: remain innovative, relevant and competitive in the markets it operates in. Many born globals remain small for many years after their establishment, and their financial possibilities remain rather limited compared to the larger players, should an MNE decide to enter the market segment that the born global operates in. Therefore, a born global's strategy must stay dynamic, and the firm needs to update its capabilities in order to remain relevant. The recent economic recession has exacerbated the market conditions for many firms, and has been particularly hard on

the smaller players. Many born globals had to face the slowing markets without the funds, assets and brand names that helped many larger organizations to weather and manage effects of the recession.

The dynamic capabilities literature is the latest academic answer to the need for dynamic adaptation and innovation in organizations. Dynamic capabilities are said to help firms to continuously innovate, renew their operational capabilities and resource bases and incorporate environmental changes (Teece, 2007; Winter, 2003; Collis, 1994; Zahra *et al*, 2006; Pavlou & El Sawy, 2011). Development of dynamic capabilities is argued to be especially important for firms operating in technology markets characterized by relatively short innovation cycles – which concerns many born globals (Zahra *et al*, 2006). The dynamic capabilities perspective suggests the central role of the entrepreneurial decision maker in the formulation and implementation of competitive strategy and development of the firm's capabilities (Zahra *et al*, 2006; Teece, 2007; Weerawardena *et al*, 2007). Dynamic capabilities do not merely accrue to firms, but are developed consciously and systematically by the wilful choices and actions of the firms' key decision makers (Grant, 1996; Teece *et al*, 1997). Virtually every framework of dynamic capabilities emphasizes the importance of the orchestration (Teece, 2007) / coordination skills of the firm's leaders in building and implementing the firm's dynamic capabilities.

In this study, I will argue that the *managerial capability* of a born global venture lies at the heart of its long-term competitive advantage. This is a capability held by the firm's top managers / key decision makers. It provides strategic logic of the organization, develops and implements the processes necessary for the organizational functioning in dynamically changing environments, and provides the processes to shape the firm's operational capabilities. In line with van den Bosch & van Wijk (2001), I argue that a firm's managerial capability is essential for developing the firm's strategy and coordinating and restructuring its strategic processes and operational capabilities. Hence, the managerial capability is a *dynamic* capability. The research purpose of this article is,

*through empirically exploring a technology born global's history, the challenges it faced throughout its development and how they were solved, identify and discuss the aspects of an effective managerial capability of technology born globals.*

In a quest to address the research purpose, I have carried out a longitudinal process case study of one successful technology born global venture over the period of 3.5 years. Studying organizational capabilities that are critical to a firm's long-term competitive advantage requires becoming intimately acquainted with everyday operations of the firm and studying the evolution of its organizational processes over time. In general, the literature on born globals is scarce in longitudinal process studies that uncover specific organizational capabilities and their evolution over time. This limits our knowledge about the sources competitive advantage of this type of firms in the long term.

## 7.2 Conceptual foundations

Based on an extensive literature review, I have attempted to incorporate both the international entrepreneurship and the international business perspectives in my definition of a born global. It is a business organization that has achieved international operations within a few years after its establishment through the application of knowledge-based resources to the sale of outputs in and the combination of input resources from multiple countries, including those located beyond the firm's domestic continent (based on Knight & Cavusgil 2004; Oviatt & McDougall 1994; Gabrielsson & Kirpalani, 2004; Di Gregorio *et al* 2008; Kuivalainen *et al* 2007). Born globals are described as being highly flexible and lacking deeply embedded administrative routines which restrain the quick market responsiveness of the larger, established organizations (Knight *et al*, 2004; Knight & Cavusgil, 2004; Autio *et al*, 2000). The descriptor "inherently entrepreneurial" is firmly attached to born globals (e.g., Knight & Cavusgil, 2004; Knight *et al*, 2004).

The vast amount of literature on born globals has been focusing on their early stages of development and rapid internationalization. The literature researched the various capabilities that born globals use to internationalize their sales and operations quickly, while being constrained by low resource availability. Authors have distinguished the following elements as having an effect on internationalization process and performance of born globals: elements of organizational culture: international entrepreneurial orientation (Knight & Cavusgil, 2004); international orientation (Knight & Kim, 2009), international market / marketing orientation (Knight & Kim, 2009; Knight & Cavusgil, 2004; Knight *et al*, 2004); specific organizational competences, capabilities and skills: international marketing skills / competence (Knight & Kim, 2009; Knight *et al*, 2004), international innovativeness (Knight & Kim, 2009), the dynamic networking capability (Mort & Weerawardena, 2006), the network development and alliance-building capabilities (Freeman *et al*, 2006); as well as specific organizational strategies: global technological competence, unique product development, quality focus and leveraging of international distributor competences (Knight & Cavusgil, 2004).

While there are a number of studies exploring the entrepreneurial behaviour of born global founders and managers in the establishment and rapid internationalization stages of these firms (e.g., Karra *et al*, 2008; Freeman & Cavusgil, 2007; Andersson, 2000), I have not been able to locate studies that investigate, which capabilities or aspects of management enable competitive operations and development of born globals *in the long term*. The growth path of these SMEs is different from those of domestic or even regionally operating SMEs: the literature suggests that these firms normally are knowledge-intensive and are characterized by a very focused and strategic approach to internationalization (Bell *et al*, 2003). They enter a number of foreign markets simultaneously, most often without FDI into the markets, by using hybrid ownership structures, distributors and other networked approaches (Madsen *et al*, 2000; Bell *et al*, 2003). Born globals compete on the basis of differentiation and place greater emphasis on product

innovation, quality, services and marketing as strategic weapons than domestically oriented SMEs. Born globals operate in more distribution channels and are led by internationally experienced entrepreneurs, who have relatively greater experience in managing in their industries, than domestically oriented SMEs do (McDougall *et al*, 2003). This evidence suggests that we cannot directly apply the theories of management and development of domestic SMEs to born globals and other INVs.

Many born globals operate in technology-focused industries, and some of them – in high-speed technological fields. Some born globals introduce versatile technologies that can be applied across markets. If they manage to enter several different product markets in their early years, the firms need to learn to manage their operations and positions in relation to competitors in all of these markets – probably while still being SMEs. After a young firm has obtained a roster of customers, it must deliver on its promises. Hence, rather soon in the firm's history, structure needs to be introduced into the organization, which until that point might have been more of an entrepreneurially driven technological workshop than a managed organization. On the other hand, born globals are characterized by a strong entrepreneurial organizational culture (Dimitratos & Plakoyiannaki, 2003; Knight & Cavusgil, 2004), hence they continue looking for new applications of their technologies and new geographic markets to enter. These two different demands: the requirement to run steady operations to fulfil customer orders and 'make the firm's living' on the one hand; and the continuous search for opportunities on the other, call for two very different organizational styles described in the literature as exploration and exploitation (March, 1991). It is unlikely that a born global will rapidly grow into a multi-hundred employee organization with a lot of resources, which could sustain these two different types of organization and management under one roof.

All of these contingencies call for difficult organizational choices to be made by the firm's management, specific structures and processes to be implemented and organizational skills to be developed in order to

accommodate the different organizational demands, development and growth, as well as the changes in the external competitive and technological environments. It is the purpose of this article to explore these aspects of the managerial capability, which together have the potential to sustain and continuously adjust the sources of a firm's competitive advantage – its resources and capabilities, and keep the firm competitive in the long term. Together, these mechanisms comprise what I call the managerial capability of technology born globals.

### Dynamic capabilities and the role of top managers

The dynamic capabilities theory is the latest academic thinking in strategic management in the search for sources of competitive advantage in the long term in the conditions of highly competitive environments. A widely referenced definition of dynamic capabilities was provided by Teece *et al* (1997:516): it is “the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments.” Dynamic capabilities are the evolutionary meta-competences and essentially, entrepreneurial capabilities of the organizations (Teece, 2007; Pavlou & El Sawy, 2011) that enable firms to continuously renew their operational-level capabilities. Dynamic capabilities are said to be very important to adopt for organizations of all sizes and operating in various industries, both high- and low-technology, since no industry stays unchanged.

The dynamic capabilities perspective (Zahra *et al*, 2006; Teece, 2007; Weerawardena *et al*, 2007) assigns the central role in formulation and implementation of competitive strategy to the entrepreneurial decision maker. Zahra *et al* (2006) define dynamic capabilities as “the abilities to reconfigure a firm's resources and routines in the manner envisioned and deemed appropriate by the firms' principal decision maker(s).” (p. 924) The authors go on to say that “there is a need for managerial vision in thinking about the firm's competitive arena and the trajectory of its future evolution.” (p. 944-5) Edith Penrose (1959) discussed the

key roles that managers play in organizations: 1) the management of resources, and 2) the management as a resources *per se*, since managers render their services to manage organizational resources. The KBV and the theory of competence-based competition (Sanchez & Heene, 1996) builds on the critical importance of management in organizations. Organizations are viewed as open systems where asset stocks and flows, including knowledge and knowledge creation processes, are coordinated and governed by *management processes*, and strategic logic is derived from *managerial cognition* (Sanchez & Heene, 1996). Managers' own processes for learning and capability development play a critical role in the knowledge creation processes of organizations and in adoption of new organizational forms that improve the firms' dynamic capabilities (van den Bosch & van Wijk, 2001).

An organization's ability to create and utilize knowledge is said to be its most important source of competitive advantage and its very reason for existence (Nonaka *et al*, 2000). Organizational knowledge creation starts with individual knowledge creation and is developed through a set of processes that amplify and crystallize it as part of the organizational knowledge network (Nonaka, 1994; Nonaka & Takeuchi, 1995; Nonaka *et al*, 2000). Nevertheless, the firm needs a set of codification conventions for articulating and structuring knowledge (van den Bosch & van Wijk, 2001). The learning processes of socialization, externalization, internalization, integration and replication of knowledge also require an infrastructure of organizational processes, both formal and informal. It is managers that organize, coordinate, lead, and thus provide the essential infrastructure for the organizational learning processes (van den Bosch & van Wijk, 2001; Nonaka & Takeuchi, 1995).

Managerial processes aimed at coordinating the creation and use of organizational knowledge are essential to a firm's abilities to integrate, build and reconfigure internal and external competences aimed at addressing rapidly changing environments, and therefore are important contributors to the firm's dynamic capabilities (Teece *et al*, 1997).

Hence, “managerial knowledge creating processes that are essential in developing the strategic logic of a firm.. are “higher-order” capabilities that can create dynamic capabilities in an organization, and therefore may be considered metacapabilities.” (van den Bosch & van Wijk, 2001:163). The literature (Castanias & Helfat, 1991) acknowledges that managers matter in the competitive equation of organizations.

The literature (Bingham *et al*, 2007; 2007a) discusses that in heterogeneous and dynamic environments, flexible and semi-structured organizational processes serve as the basis for organizational capabilities. The versatile international markets, and for many born globals - technology market environments, are the type of such conditions. Organizational processes are “sets of actions that repeat over time and are used to accomplish some business purpose” (Bingham *et al*, 2007:3). They are developed through cognitive heuristics, which combine best practices with firm-specific uniqueness, and focus on opportunity capture – thus allowing for flexibility, adaptation and learning.

A firm’s managerial capabilities are developed over time by integrating the knowledge of the individual managers on a management team in a way that enables them to provide uniquely valuable services for the operations of their specific organizational group (van den Bosch & van Wijk, 2001; Penrose, 1959). Van den Bosch & van Wijk (2001) discuss that in a collective setting, managers should be able to complement and leverage each others’ individual knowledge. Changes in the management team will lead to reconfiguration and reintegration of managerial knowledge, which is to a large degree tacit, and will lead to new managerial capabilities at the firm level. Thus, managerial capabilities of an organization will depend on the degree of knowledge integration of its individual managers and the stability of the management team (van den Bosch & van Wijk, 2001). Integration of capabilities of managers at different levels – front-line, middle-level, and top managers, creates the strategically important managerial competences of an organization due to the different knowledge



domains that they deal with (functional, technical, company and environmental). While SMEs will have fewer layers of management and the communication lines among employees will be shorter than in large organisations implicitly discussed by van den Bosch & van Wijk (2001), the importance of integrating knowledge of managers of various levels remains critical to a firm's managerial capability.

Based on the above discussion, I view the managerial capability of an organization as a set of managerial processes, skills and decision rules that are aimed at: 1) developing the firm's strategic logic to address the environmental and internal organizational developments, 2) continuous organizing and reorganizing the firm's organizational capabilities to follow the strategic logic. Integration of managerial knowledge involves systemic interdependencies among specific knowledge components and domains, path dependencies, contextual variation and idiosyncratic managerial mental models and cognitive processes. Thus, managerial competences are likely to be highly firm-specific and are likely to extend beyond any generic or industry-specific knowledge and capabilities that the individual managers may have. As these systemic interdependencies are built over time, the firm's dynamic managerial capabilities become increasingly firm-specific, difficult to imitate, and (when effective), become a key determinant of its sustainable competitive advantage (van den Bosch & van Wijk, 2001).

I now turn to the methodology and the empirical study. The article is structured as follows: after the Methodology section, history of a Danish technology born global firm is reviewed, key stages in its development, the challenges it faced, and how and by which actors they were resolved, are discussed. Based on this analysis, I attempt to identify and discuss the key aspects of the managerial capability of a technology born global.

### 7.3 Methodology

In order to study the complex phenomenon of a born global's dynamic capability, I have conducted a longitudinal process study of one successful Danish technology-based born global. I spent 20-70 percent of my working time at the company's premises as an Industrial PhD student and a trainee over the period of three years (2007-2010). Through the trainee position in marketing communications, I was able to get closely acquainted with nearly all aspects of the firm's business, products and markets, to participate in strategic meetings, discuss various issues with the firm's managers and specialists of all levels. The main source of data was participant observation and a series of semi-structured interviews that focused on specific aspects of the firm's operations. In total, 20 interviews were carried out in 2009-2011 with 11 firm members, including the top managers, R&D project managers and specialists, technology marketing and regional development managers. The interviews lasted 1-2 hours each. They were subsequently transcribed and analyzed by me. Additional sources of data were the company literature and industry- and mass media publications. An important advantage of the process study was the possibility of triangulation, allowed by the availability of different data sources (Yin 2003). While the longitudinal approach allowed evaluating effects of various organizational processes. The firm's management was given final drafts of the article to review and comment on my interpretation of the events.

The analytical approach in this article was iterative (Easton, 2010; Langley, 1999): having observed the firm for a long time, I chose the KBV and the organizational and dynamic capability approach as the one having the best potential explanatory power as for the sources of competitive advantage in the long term. I then collected interview data based on a preliminary theoretical framework build from the literature, and have completed it with the observations data. The data were then analyzed following the critical realist guidelines (Danermark *et al*, 2002), using narrative analysis (Bryman & Bell 2003), time lines,

content-analytic summary tables (Miles & Huberman, 1994), and retroduction (Danermark *et al*, 2002) / explanation building techniques (Yin, 2003) in order to single out the critical aspects of the managerial capability and explain their relation to the competitive advantage of the firm. This study makes claims for analytical generalization for the case of technology-based born globals.

## 7.4 Empirical study and analysis

DBG is a Danish technology born global (code-named DBG for confidentiality reasons), which was established based on pioneering technologies in Class D / switching amplification. The technologies had been developed by the firm's founder in his PhD thesis, which had been written in a collaboration between the Danish Technical University (DTU) and an established Danish consumer electronics manufacturer (here code-named EM). Switching technologies offer significantly higher power efficiency and a range of related benefits to audio manufacturers over the traditional analogue technologies, which have been used in audio appliances since 1930s.

After his defence, the founder was hired to run the new amplification department at EM, but soon realized that there was a much bigger application for his technologies. His vision was for the technologies to become the new standard in every audio device, "The Intel of Audio". The founder embarked on developing the business idea and persuading EM to spin the department off into a separate company. After ca. one year, in 1999, EM agreed and established a JV with the founder. He entered with his knowledge and patents, and EM entered with a majority investment and administrative support functions. There was an appointed Board of Directors for DBG consisting mainly of EM's senior managers. The board appointed a part-time administrative director (CEO) to help the founder run the business. EM provided the new firm with access to its HR, IT and finance functions for monthly fees. They also provided a lot of support in developing the first

generation of DBG's products and setting them into mass production, using EM's own manufacturing line in Denmark. Implementing a novel technological prototype into a working product that meets all international standards and setting it into mass production requires a lot of engineering experience and expertise.

After ca. 1 year, DBG moved away from EM's headquarters in a remote Danish town into the immediate proximity to Copenhagen and the DTU as a source of students and graduating engineers. The firm hired several young and eventually, several more experienced engineers, including a highly experienced Director of Product Development (in 2002).

DBG's first products were high-power B2B amplifiers (250W, 500W and 1000W) for application in professional audio – the applications where the advantages provided by DBG's technologies would be most appreciated. The very first product line, developed with the help of EM's top designer following the high visual design standards of EM's own products, actually turned out to be unsellable due to the high costs. When the expensive design components were removed, the products eventually found their customers. The very first independent customer of DBG (besides EM) was Sony.

The founder was not only a bright engineer, but also a talented businessman and marketer. Together with his small engineering team, he travelled extensively to international and scientific fairs and promoted DBG's products directly to potential customers. They scanned and researched potential markets to see where DBG's technologies could be applied next. He also developed pricing guidelines for the new technology.

The firm eventually developed their products and technologies further: in 2003, DBG developed a line of integrated amplification solutions (amplifier + power supply), which became the hallmark of DBG. The novel switching technologies were difficult to integrate for most audio manufacturers. DBG's integrated approach became its source of

competitive advantage. The firm also began offering development of customized solutions for large orders.

### Diversification through collaborative R&D

In order to spread DBG's technologies to the widest possible range of applications, they had to be implemented into an IC (chip) in order to give them validity in the eyes of mass electronics manufacturers, as well as to protect them from unlawful copying. Semiconductor development is a highly resource- and finance-demanding process, and DBG did not have the funding, professional skills, and the very pricy equipment for it. In the pursuit of various semiconductor markets (consumer audio, automotive audio, mobile audio), DBG looked for powerful MNE partners with the engineering, equipment and manufacturing resources and facilities, as well as a good standing in the specific markets, to collaboratively develop a product together. The idea was to develop alliances that would be strategically and financially beneficial for both parties. From its side, DBG offered its unique patented technologies and the work of its engineers. Due to the high performance characteristics of the technologies and intelligent marketing by the firm's management (discussed further down), DBG was able to obtain highly beneficial collaborations with some of the largest players in the mobile phone, consumer audio and automotive audio markets. The firm was able to successfully enter two of these markets by developing innovative products in collaboration with the MNEs and using the marketing help of the MNEs. A collaboration with an automotive audio MNE did not go successfully due to inadequate management from both sides.

A lot of credit must be given to the founder and the CEO of DBG who were able to develop appealing business cases to each of the MNEs and 'sell' them the idea of these collaborations, which were extremely beneficial for DBG both in financial and strategic terms.

## Organizational development

Already in 2001-2002, a group of highly experienced engineers were hired into DBG to help with independent (from EM) product development and production implementation. An experienced Director of Product Development was appointed. Several years into the firm's history, a Product Development Council (the PDC) was created (consisting of the Founder/CTO, the CEO and the Director of Product Development) in order to decide the firm's strategic and product development roadmap. New projects were to be evaluated based on their business cases, project fitness as for resource availability and current technological development, and strategic importance to the firm. The Director of Product Development also implemented a structured stage-gate product development process, which each product development project was to be put through. Each project could be stopped at any of the 'gates' if it did not satisfy one of the aspects mentioned above.

However, in reality, the structured project screening and implementation processes were often not followed through. The founder, who was also a minority shareholder in the firm, had a highly entrepreneurial management style and, triggered by the interest in DBG's technologies by new customers from new product areas, often started research into new areas. The engineering resources were often destructed, engineers were given too many simultaneous assignments, and their attention dissipated. Plus, the founder had a tendency of putting too much pressure on engineers by asking them to complete projects in unrealistic time frames and/or with unrealistic technological specifications.

Already in its early years, DBG was divided into three different departments (called 'business units'): Standard Products, Customized Products (based on the standard product platforms), and the Partner Business Unit, where IC (integrated circuit, chip)-based products were developed in strategic alliances with partners. The Director of Product Development was heading the first two departments, and the Founder

was in charge of the Partner Business Unit. There was also a separate R&D lab, where engineers were involved into new product R&D.

Since the division into departments, a division between the so-called Hardware (Standard and Customized Products) and the Partner Business Unit began. They were working on significantly different applications, there was not much knowledge sharing, so learning was not happening from one side to the other. Eventually, the engineers from one department did not know what was happening in the other, even though all of them were still sitting on the same floor and the company was only ca. 40 people in total.

DBG engaged actively in academic collaboration with the DTU, and a number of Bachelor, Master and PhD students were working on their degree projects with or taking courses at the firm's facilities. The projects spread across a range of fields, mainly with the purpose of explorative research for DBG.

Management-wise, the founder had a strong decision making power in technology development in the venture due to his status as a founder, the CTO and a minority stakeholder in the venture. From the firm's early days, a part-time CEO was appointed by the Board of Directors. However, the part-time setup was not optimal, since the CEOs were also in charge of other large projects at EM. Until 2005, the careers of most CEOs at DBG were short-lived. The Board finally realized that DBG needed a dedicated full-time CEO and in 2005, the current CEO joined the firm and managed to build productive working relations with the founder.

As for EM's administrative functions that DBG was using: with time, some of them became a noticeable restriction to the firm. DBG had to follow the professional hierarchy of EM, which was not always suitable for a young dynamic venture. DBG felt the lack of a dedicated HR professional that would consider DBG's specific needs. The IT function was helpful, but also limiting in some issues. And the capacity of the legal services were not suitable for the fast and flexible operations

of DBG. However, EM did not want to relinquish control of these functions, combined with the need to optimize the use of these resources by the Group.

Overall, however, DBG was operating as an *independent* subsidiary. The business planning and management were carried out by PDC, while the Board acted largely as a financial control function. According to DBG's CEO, the mother firm is not very knowledgeable about DBG's business and markets, as they are completely different from those of EM, and because DBG's business corresponds only to 2 percent of EM's Group's revenue. As long as DBG has profitable business performance and year-on-year growth, its management is trusted to run the firm. Yearly business plans and regular financial reviews with EM are done nevertheless.

As the firm's customer base grew, the firm opened small representative offices in Tokyo, San Diego and Seoul in order to support its collaborations with customers and become more 'local'. The Seoul office was closed after the collaboration with MNE2 was finished. And the San Diego office was eventually moved to Chicago, to the US office of EM, for cost optimisation reasons.

### Environmental scanning, marketing and brand building

DBG has been very active in both marketing its products and building its brand ever since the firm's establishment. The firm's marketing and environmental scanning processes are, in effect, one: the top management, senior engineers and marketing specialists attend trade fairs, scientific conferences and pay direct sales visits to the current and potential customers, some of whom are major global technological trend setters, i.e. Apple. During such trips, they offer DBG's products and services, learn about customers' product plans, as well as the wider global technological development, i.e. merging of different technologies and the newly envisaged types of products. This knowledge informs DBG's own product planning and development. The actual R&D



happens inside the firm, and its major innovation engines have always been its own engineers.

The founder understood the role of a brand for technology products early on and promoted DBG's brand in the press and to the customers. He also encouraged the customers to communicate the brand on their consumer products. The founder thus attempted to follow Intel's strategy of component brand building, but without the costly marketing campaigns. Due to the high functional qualities of its products and the novelty of its technologies, DBG got quite a lot of coverage in the international and Danish media, especially during its early years. Through the firm's numerous R&D collaborations and customized product development, some customers promoted DBG's brand on their consumer products and in the marketing literature as a differentiating and a value adding component, thus building DBG's brand to the wider consumer audience.

### Core competences and their protection

The founder was always very aware about the need for protecting the firm's technologies. Patenting practices were always high on the priority list, conducted by the firm's engineers with some support from EM's patent lawyer. DBG was careful to patent both major and smaller inventions. Due to its proactive patenting and other IPR management practices, the firm did not encounter IP infringements during its R&D collaborations with MNEs, where the technologies had to be disclosed to partners. However, it did experience one IPR infringement case by a Chinese manufacturer. DBG was preparing to go to court in China, but pre-empted it by talking to the Chinese firm's customer, who then refused to use the copycat products. The copied products have not been seen otherwise.

DBG was always very clear about its core competences and the need to keep them in-house. All of the research and product design are done in-house; only implementation is in some cases outsourced to or conducted collaboratively with trusted partners. The manufacturing,

quality control and distribution are outsourced to an EMS (electronic manufacturing services) partner in Asia.

### Ownership and management changes in 2008

In 2007-2008, the firm achieved a certain size and was either developing products for or already operating in three different markets: consumer and professional audio/video (A/V), mobile and automotive. There was a need to decide on the firm's future strategy; its growth had to be managed. Following a number of considerations, the Board of Directors made a decision to buy out the minority stake of the founder and become a 100 percent owner of DBG. The founder was asked to leave the firm. The rest of DBG's leadership remained in the firm, and a somewhat updated management team was formed: the CEO remained in his position, the Director of Product Development became the CTO, and one of the firm's managers was appointed a COO. According to the CEO, the decision to choose between the founder and the CEO had to be made due to the big differences in their management styles. The founder had a more unstructured, or one could say, more entrepreneurial way of managing, but without enough consideration of the firm's existing plans, resource allocations, and more importantly, the firm's obligations to its existing customers. The founder's overpromising and sometimes inconsistent style had proven to be unpopular with some of the firm's large customers. While the CEO had a more professional management style and a lot of experience in managing organizations.

These changes coincided with the financial crisis of 2008 and the subsequent recession. EM suffered great losses in its businesses and was undergoing restructuring and cost cutting. As a part of the group, DBG had to streamline its processes and reduce costs in every area. After a thorough assessment of the firm's situation in its markets, in 2009 a new strategic plan was commenced. The new management decided to focus on DBG's stronghold – the consumer and professional audio and video markets (A/V), where DBG had a good standing and a strong

brand, while its market share was still low. Further R&D in the mobile audio market was stopped, while the existing mobile chip was continued to be marketed. Due to the failure to develop an independent IC-based solution for the automotive market, it was decided to commit DBG's automotive operations to EM as a sole customer, where the two firms develop premium audio systems for automotive manufacturers. Major semiconductor manufacturers had already entered the mobile and automotive audio IC markets by that time and competing with their resources (libraries of ready ICs, large R&D teams and funding) became very difficult.

DBG's R&D processes became reorganized to follow the new strategy. The structured project screening process was being strictly followed. Anyone in the firm could submit a detailed project proposal, which was then assessed by the PDC (consisting of the top management) by the same standards as before. Only the projects approved through this process were pursued. Research resources were now committed only to the approved projects; and all ongoing unrelated exploratory research was stopped, including student projects. The implementation stage-gate development process was also adhered to strictly, and each project could be approved or stopped after specific phases in its development if it no longer met the business case, fitness and strategic importance criteria.

The patenting practices were also streamlined and downsized to strategically protect only the key patents in selected countries. This was done due to the increasing year-on-year costs of sustaining a large number of patents in many countries. The smaller inventions began to be protected in other legal and scientific ways.

In 2011, the firm employed ca. 30 people, had a well-developed organizational structure, which includes top management, engineering specialists, project managers and senior managers, a small quality department, marketing & sales and regional business development managers, and logistics specialists. Most of the people sit in the HQ

office in Denmark, while the firm also operates two small regional offices with 1-2 people in Tokyo and Chicago.

### Financial performance

The firm has been profitable since 2005. The 2010/2011 financial figures showed that the firm's performance in its new focus markets – consumer and professional A/V, have been positively growing over the years. The development contract with MNE2 in the mobile phone market brought in a lot of additional revenue and enabled DBG to overcome its first critical years, establish itself and pursue R&D in other area. Once that contract had finished, however, DBG had to rely on its core businesses. The firm had managed to build a solid presence, a reasonably wide product range and gain a positive reputation and brand in its core markets.

DBG performed well during the recession. In fact, in 2010, as the world began coming out of the recession, the firm was not able to cover the great number of accumulated orders for its products due to disruptions in supply chains and factories across Asia, which had also been caused by the recession. The firm had remained profitable throughout the recession.

#### 7.4.1 Analysing the stages in the firm's development

Below, I discuss the key stages in the firm's development, following both the literature (Karanjian, 1988; Karanjian & Drazin, 1989; 1990) and the development history of this specific firm, the main challenges it faced, how they were solved, and who were the critical actors in this process.

1. *Conception.* In this stage, the idea of the firm was developed, funding sought and found, and the firm established. In this stage, it was the founder's very strong entrepreneurial drive, vision and a strong personal ambition that played the key role. If he did not possess these qualities, this unique

technology might have very well remained within the realm of the established electronics manufacturer and would have not been applied outside its products. Another important element was an entrepreneurial person in the mother firm that was willing to support the new venture. However, the founder's role was stronger, since according to his former colleagues, he would have probably found another source of funding if it were not EM.

2. *Development.* In this stage, the key challenges of the venture were to set up a functioning organization and to develop the first series of products. In tackling challenges in this stage, which many start-ups never overcome, DBG was quite lucky that an established electronics manufacturer with a culture of supporting its spinoffs became the firm's majority investor. The critical functions were provided to DBG from its very first days: office space (for the first year), IT, HR, finance and legal services – although all of these for fair regular fees. Furthermore, critically for a new technology, EM's experienced engineers helped to mature DBG's technology and early product prototypes into manufacturable products. Technological products have to follow a lot of various international standards for safety and the materials/components used in them; their quality and robustness must be high. Furthermore, DBG's first product line was manufactured at EM's plant in Denmark. Therefore, EM's role in the establishment stage of DBG was very important.
3. *Commercialization.* At this stage, the marketing and communication skills, and the international entrepreneurial drive of the founder were critical. Together with his small team of engineers, they travelled the world, presented DBG's products at key trade and scientific fairs, communicated with customers and their suppliers at every possible occasion, paid numerous direct sales visits to potential customers, and finally

managed to close several important sales. The founder also made sure the news of DBG's technology got as much publicity and attention as possible. The general atmosphere in the audio circles also helped, because according to the interviewees, "Class D" was the hot news in the industry at the time. Everyone wanted to see what this new technology could do for them.

DBG preserved EM's name as part of its company name. EM's name is a highly valued international brand (with a stronger standing in Europe and Asia than in the US), so it gave DBG validity and initially opened many doors to present their products. However, once DBG was at the meetings, it was up to the start-up's managers to prove the validity of the technology and products. DBG developed innovative high-technology B2B products, as opposed to the mother firm, where the brand stood for above-premium B2C products of high design and quality. Furthermore, in some of the conversations, the EM connection did give initial validity to the firm but had negative connotations for DBG's business offer, since EM's brand carries associations with a premium price, which is a negative factor in component product markets.

4. *Diversification.* In this stage, following the big vision, the founder attempted to implement his firm's technologies into as wide range of product applications as possible. The founder's role in this process was critical: his highly effective networking and marketing skills enabled the firm to overcome their resource limitations by obtaining several highly beneficial (in most cases) collaborations. They enabled the firm to develop the technologies into IC-based applications for several different markets. The founder, together with the CEO, developed business propositions for each potential MNE partner, where they outlined potential strategic benefits for the partner. This required deep

understanding of the MNE's business, product line, and general developments in the industry. In all of these collaborations, the MNE partners contributed disproportionately much more resources than DBG, and either got a variant of a product, an exclusive product, or a license for DBG's technologies in return. DBG got the great financial benefits and in some cases, a ready product for its own use and sale. Thus, these collaborations were highly beneficial for DBG from the perspectives of product development, spreading its technologies into new markets, and financial returns to the firm, which also enabled financing the exploratory research and development in other business areas.

Due to the founder's big vision for the firm, DBG's management placed high emphasis on brand building and managed to raise brand awareness in the firm's focus markets through actively promoting DBG's brand to the potential customers, at trade fairs and through the press. The founder, the CEO and their increasingly professional team can also be credited for making efforts at component brand building to the consumer audience (following Intel's example) through working collaboratively with B2B customers and negotiating for the promotion of DBG's brand through the customers' products and channels.

However, the internal atmosphere in the organization was deteriorating. There was a great division between the two departments, and expertise of one department was not utilized by the other. Many engineers from the IC department felt overworked and underappreciated due to the founder's sometimes unreasonably high demands. Some of them left the company, taking the valuable knowledge and skills with them. The internal misalignment went as far as the expertise of the senior engineers was sometimes not considered in developing target product specifications for

projects by the other department. There was a great division over the strategic directions that DBG should be pursuing and the ways that R&D planning, distribution of resources and project implementation should be run.

5. *Growth.* While still being a small firm, DBG spread resources too widely and was in different stages of research and development in several markets. The markets required principally different products, business models and engineering skills. DBG would not be able to support its innovation leadership in all of these fields simultaneously; while differentiation and technological leadership is the core strategy that make SMEs relevant and competitive in international markets (McDougall *et al*, 2003; Madsen *et al*, 2000). Hence, a decision had to be made on how to manage the firm's current situation and its future development. *The* Board of Directors felt that the firm needed an experienced professional manager to handle its growth, and the CEO was chosen to lead the firm over the founder. The founder was characterised by a somewhat more entrepreneurial, but also a more unstructured, inconsistent, and sometimes overpromising manner of running the business. The Director of Product Development was to be the new CTO (Chief Technical Officer); and a COO (Chief Operating Officer) was appointed. The founder's stake was purchased by EM and he was asked to leave the firm. The final decision-making role in this difficult situation was made by the Board of Directors and EM as the full owner.

Following a more structured business approach, the reorganized management began implementing much more structured management principles in all aspects of the firm's strategy and operations. Following a professional market assessment, the decision was made to focus the firm's resources on its two stronghold markets. Streamlining and focusing of the research, development, IP management and



other processes followed the new strategy. The new management also ended division in the organization. The management team is fully aligned and develops the firm in a common direction. The engineering resources are mixed and matched to development projects based on the required skills. There is much better communication, information exchange and learning in the organization. A more structured approach to project evaluation and the sales process is in the plans for the future.

In spite of the structurization, the firm has remained innovative: research resources are dedicated to specific projects that have been approved by the PDC and are included into the innovation roadmap. The next big challenge is to transfer from the analogue to all-digital technologies. Most of DBG's current technologies are still analogue, and it is a big research effort to make the transition. DBG's researchers are already working on it. The firm's integrated environmental scanning and marketing processes remain wide-reaching as before, and they inform strategy and new product development. Attention to brand building has remained high, and now the firm is earning revenue from allowing placement of its brand on consumer products.

In this large transformation, the key role has been played by the firm's new management team. They applied the more professional strategy development and management techniques to turn the firm into a well functioning organization that has the environmental scanning, strategy development, product planning, research, development, logistics, quality control and marketing & sales functions. Internal communication and learning has significantly improved, and the firm works as a unified organization. It delivers on its promises to the customers, keeps a close eye on the global, competitor and customer innovation, and developing its own timely and innovative products.

## 7.5 Discussion

This study revealed the specific elements of managing a technology born global, which have the potential to enable long-term competitive advantage of such firms. This managerial capability has the potential to build mechanisms for incorporating external and internal changes into the organizational processes, keeping it innovative and relevant, while effectively and efficiently using the firm's limited resources. The central point to keep in mind is that many born globals will remain SMEs long after their establishment while operating in numerous international markets, and possibly in several product markets, alongside the changing social and technological environment, and evolution of the firm's technologies and organization. Hence, it is important to understand the dynamic processes of the managerial capability in order to ensure the competitive advantage of the ventures in the long term. The following are the elements that I have found to be critical to a technology born global's managerial capability.

### 7.5.1 Structure and policies for R&D planning and implementation

When discussing the time perspective, a new firm will begin developing its managerial capability by incorporating the knowledge of its leaders from the very establishment. The early stages of any venture are normally characterized by a very small organization, very little structure and a highly entrepreneurial approach to business – basically, trying to survive as a venture, develop the first products and get them commercialized. Eventually, a structure builds up (Karanjian & Drazin, 1989; 1990). The literature (Bingham *et al*, 2007; 2007a) suggests that for younger entrepreneurial organizations, structure is beneficial, because otherwise they can be somewhat chaotic due to their entrepreneurial drive, innovativeness and informality. While for the larger, established firms, structure on the contrary may limit the firms' flexibility and dynamism. An optimal solution that allows for structuring entrepreneurial activities of young firms, while paying

significant consideration to the effective and efficient use of their resources, is found somewhere in-between: as Bingham, Eisenhardt and Davis (2007), Bingham, Eisenhardt and Furr (2007a), and Brown and Eisenhardt (1997) discuss, in semi-structured managerial processes that leave space for innovation, creativity, flexibility and intrapreneurial action.

The rules for strategic technology and product planning and implementation, which I was able to observe in this study, were strict enough to ensure effective use of resources, and open enough to allow for individual initiative and intrapreneurship from all organizational members. Such rules are extremely beneficial for structuring, coordinating and optimizing operations of a technology born global. Developing such processes is as important as actually *adhering to them*. These processes have helped the case venture to remain profitable throughout the difficult and still ongoing recession, to focus and streamline its R&D activities, and to expand its operations into the focus markets.

The project screening process based on the specific aspects important to the venture (i.e., business case, resources- and technological fit and strategic fit) and measurable aspects has shown to be effective. The results suggest the importance of the R&D planning process to be open enough, so anyone in the organization has a possibility of coming up with a well formulated idea and enter it into the screening process. This enables employees to take ownership of projects and have an opportunity to show initiative in relation to the firm's strategy and operations. Such process design enables the firm to remain flexible and responsive to unexpected market opportunities.

### **7.5.2 Involvement of different functions and levels of managers in marketing and environmental scanning**

The findings from this study support the literature discussing that an organization's managerial capability is built through integrating the

knowledge and capabilities of individual managers, where they can complement each other's knowledge and skills (van den Bosch & van Wijk, 2001; Penrose, 1959). Managerial capabilities of an organization depend on the degree of integration and the span of knowledge of its individual managers (van den Bosch & van Wijk, 2001). The findings from this study show that organizational structures and activities that provide a forum for ongoing discussion and knowledge sharing are extremely beneficial for creating a common vision among the key decision makers and simplify common strategic planning, process development and enhance collaboration on daily issues.

The finding from this study specific for born globals is the effectiveness of creating structures and processes for sharing individual knowledge of managers through their common international marketing and market scanning activities. Environmental scanning carried out by the people with different expertise *and* decision making power creates an aligned understanding of the ongoing global technological development, as well as enables knowledge exchange among managers and specialists with different expertise. This creates a common starting point and understanding for developing the firm's strategy, R&D- and market roadmaps. The findings suggest that the important actors and aspects considered in the environmental scanning process of a technology born global are: 1) technological and product developments of the immediate customers and competitors; 2) the wider technological development, which is observed at the large international trade fairs, communication with other MNEs (potential customers) and the world's trend setting companies; and 3) the related scientific development, which can be observed at scientific conferences and in patent databases (although there is a significant time lag between an invention, filing of a patent, and granting of it). Hence, it is argued that a very important aspect of a technology born global's managerial capability are the wide-reaching environmental scanning processes carried out collaboratively by the engineering and marketing specialists and the top management.

### 7.5.3 Processes and structures for effective internal communication and knowledge sharing

This aspect continues the argument of the previous one. The findings show the critical importance of implementing ongoing formal and informal processes and mechanisms for sharing information and knowledge in order to incorporate the knowledge of individual managers and functional specialists into the managerial capability of the firm. This creates a basis for developing the dynamic capability of the organization (*cf.* van den Bosch & van Wijk, 2001). Such processes could be *regular* general company meetings, meetings on specific issues, online knowledge databases, and other forums. The objective is to align the organization in a way that everyone is aware about the ongoing projects, which person has which specific expertise, and creating an open and a collaborative atmosphere among all organizational members. Such activities create a structure for managerial learning, which is a critical aspect of developing a managerial capability in an organization (*ibid.*).

Furthermore, this study has shown the importance of creating an atmosphere in the organization where individual opinions are listened to and individual expertise is considered by the top management. This aspect is extremely important, considering that a technology born engineers are often highly qualified, specialised, and carry a unique knowledge of the novel technologies. The study has also revealed the importance of fair and respectful treatment of employees. While it is commonly known that a firm in its early stages may require long hours from its employees, this approach cannot last indefinitely, as people become tired and disillusioned. As discussed above, a born global's specialists can be very difficult and expensive to replace, if they do decide to leave and take the valuable knowledge with them.

#### **7.5.4 Collegial decision making by the top management**

This study has shown that collegial decision making with a relatively equal distribution of power among the key decision makers is conducive to effective and consensus-based management of an organization. Such approach builds a basis for decision making in the best interests of the organization, and safeguards against the possibility that the firm is run singlehandedly by any one individual, i.e. founder. This approach leads to alignment among the firm's leaders in strategic planning, implementation, management principles, and thus prevents division in the organization.

#### **7.5.5 An external supervisory board as a controlling and an advisory body**

This study has portrayed a situation that is typical for born globals and other SMEs: a conflict of management principles between the founder and the rest of the top management. Such situations are difficult to solve and can be detrimental to the organization's development, as has become apparent from this study. Therefore, an external supervisory board is a helpful institution that can ensure longevity of an organization and decision making in its best interests. The supervisory board can also serve as an advisory body to the firm, helping the founder and managers in large strategic and investment decisions.

### **7.6 Conclusion**

In this study, important aspects of the managerial capability of technology born globals have been discussed by building on the literature in knowledge management and international entrepreneurship, and having analyzed the history, development stages, challenges and solutions of a successful technology born global. This capability is viewed as a dynamic capability, which has the power to renew the firm's resources and capabilities and incorporate external and

internal changes, and has the potential of being a source of competitive advantage for technology born globals in the long term. This study makes important contributions to the literature on international SMEs, as it discusses the managerial capability as a potential source of competitive advantage of such organizations in the long term, considering their widely spread international operations, small size and limited resources.

From the practical perspective, this study has revealed a number of aspects of the managerial capability that had been used to solve various challenges and occasional dead-locks throughout a technology born global's history and to ensure the firm's evolutionary competitiveness. These challenges are typical for other technology-based international SMEs, hence the findings should be interesting and valuable for their managers.

A valuable avenue to expand this research would be to enlarge the sample with more process studies of the managerial capability of born globals and thus develop and validate the discussion.

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# Chapter 8

## Conclusions

The research purpose set out at the beginning of this dissertation was:

*To describe and explain the organisational factors and processes that serve as the sources of competitive advantage of technology-based born globals in the long term.*

To address this research purpose, I have defined a number of knowledge-based organisational capabilities through the iterative approach of continuous literature review and a large amount of empirical work. These capabilities are argued to contribute significantly to the long-term competitive advantage of technology-based born globals and other international technology-based SMEs. These capabilities contribute through the effective integration of individual expertise into semi-structured organisational processes, which are stable enough to provide effective core operations of the firm, but are flexible enough to incorporate the ongoing environmental, as well as internal organisational changes. The capabilities that have been defined and studied in this dissertation are the R&D-related, alliance, branding and managerial capabilities. These capabilities cover or contribute to some of the core processes and competences of technology-based born globals and therefore are highly important to sustaining their competitive advantage over time.

To describe and explain these capabilities and their evolution in time, a longitudinal process study of one successful technology born globals has been conducted. I had the opportunity to hold an internal position with the firm for 3 years of the project, hence a large amount of

participant observation, interviews with various organisational actors, as well as a review of relevant publications have enabled a rich and a longitudinal study, which has been conducted in the critical realist tradition. The longitudinal process perspective is seen as a highly relevant method for addressing the purpose of the dissertation, and as an important contribution of this research.

In the following section, the specific theoretical contributions of this dissertation are discussed. Afterwards, to complete the study, the findings from the articles are analyzed from the organisational learning perspective in order to see how learning happens in international SMEs and how the learning processes can contribute to the development of the investigated capabilities over time and to the firms' long-term competitive advantage.

This discussion is followed by a number of practical recommendations stemming from this study. The dissertation is concluded with a discussion of the quality aspects.

## 8.1 Theoretical contributions

The main value of this research is that it has investigated in detail a number of organizational capabilities that, if exercised effectively, can be the central sources of competitive advantage of technology born globals in the long term. The study has uncovered a number of important aspects of each of the capabilities, and has discussed the more and the less effective ways of implementing specific organizational processes based on the experiences of the case born global venture. Such studies are scarce in the international entrepreneurship literature. Yet, understanding of such competitive capabilities is important if we are to identify, which organizational aspects can make technology start-ups into sustainable international businesses. Born globals are very important to many of the world's economies, especially those of the smaller countries: these firms are potential engines of economic growth and creators of employment opportunities. The study makes a number

of contributions to the international entrepreneurship literature, as well as contributions to the literature fields of alliance management, branding, R&D and innovation management, dynamic and managerial capabilities and organisational learning (see Figure 2.1).

In discussing the theoretical contribution of this dissertation, I would like to refer back to the summary of the sources of competitive advantage of born globals found in the extant literature, which were discussed in sections 2.6.1-2.6.4 and summarized in section 2.6.5. Some of these findings have been confirmed in this study, the discussion on some of them has been enriched, and some new ones have been identified and discussed. Below, these aspects are discussed one by one.

- Manager's / founder's characteristics:
  - global vision from inception,
  - prior international and industry experience,
  - learning orientation,
  - preference and capacity for cross-cultural collaboration,
  - the capacity for institutional bridging.

Several authors have highlighted the individual characteristics of the entrepreneurs as the main factor of a successful founding and rapid internationalization of born globals (Karra *et al*, 2008; Weerawardena *et al*, 2007). Importance of the individual personality traits, skills and experiences of the founding entrepreneur have certainly been observed in the case venture's history. While the characteristics and visions of the founding entrepreneurs and managers are extremely important to the inception, original strategy and the early years of a start-up, it has been argued throughout this dissertation that it is not any single individual's characteristics that serve as a source of *a long-term* competitive advantage of an organization. I have argued that the sources of competitive advantage of born globals in the long term are their specific organization capabilities, which allow for *integration of specialized*

*knowledge of all organizational members* in an effective manner. Any person's individual characteristics can carry a firm so far (and in specific cases, that person can turn out to be a genius and be vital for the organization for decades, as has been the case with Steve Jobs, for example). However, sustainability of an organization *over time* cannot depend on a single individual. It needs to incorporate input and knowledge from all organizational members. This can be done through introducing processes, policies and acquiring organizational skills, which enable knowledge integration, individual initiative and knowledge sharing and creation. Some of these organizational capabilities have been studied in this dissertation.

In contrast to emphasizing the importance of the founding entrepreneur, the study of the managerial capability in this dissertation has shown the critical importance of *collegial decision making* in the top management team with a relatively equal distribution of power among the executives. Such setup gives basis for a consensus-oriented decision making and a coherent and unified management of the born global, stable over time. Such setup protects the firm from becoming a one-man-run organization by a member with more power (i.e. the founder with an ownership stake) and from possible organizational division. The important role of an external board acting as a supervisory and an advisory body has also been highlighted in the study. The boards can help born globals to solve difficult deadlocks, i.e. a fundamental disagreement about management approaches in the organization between its key decision makers, in the best interests of the firm and with a long-term perspective.

- International entrepreneurial orientation (of both the founder and the firm)

This aspect has been defined by Knight & Cavusgil (2004:129) as reflecting “the firm's overall innovativeness and proactiveness in the pursuit of international markets. It is associated with innovativeness, managerial vision, and proactive competitive posture.” (A similar

definition of an *international orientation* is given by Knight & Kim (2009). These aspects of organizational culture have certainly been observed in this study. It is difficult to imagine that a born global can be built if the management is not looking for business opportunities abroad, is not committing resources to and aiming for international markets with its products and strategies, and is not willing to learn from its international experiences and adapt the organization and its operations accordingly. International entrepreneurial orientation has not been a specific focus of this study, as it has been investigated by other authors, but it is a defining characteristic of born globals and has been on the background of the discussion of all the focus capabilities in this study.

The contribution of this study has been in identifying and discussing the specific processes and structures, through which the international entrepreneurial orientation can be implemented in a born global venture in an effective and efficient manner. Specific marketing processes and aspects of the alliance capability have been discussed with the objective of acquiring international MNE partners, developing globally applicable products and entering international value chains by technology born globals. Specific international brand building strategies viable for a resource-limited international SME, have been identified as elements of the branding capability. The processes of broad environmental scanning and collaboration of the various management levels and organizational functions have been identified and discussed as aspects of the R&D-related capabilities and the managerial capability. As have been the types of information sources for collecting data on the technology and market environments.

- International market / marketing orientation; management's commitment to international markets
- International marketing capabilities / competences

International marketing orientation is defined as “a managerial mindset that emphasizes the creation of value, via key marketing elements, for



foreign customers” (Cavusgil and Zou, 1994; in Knight & Cavusgil, 2004). Knight & Cavusgil (2004:129-130) discuss that it is specific to born globals: it facilitates knowledge of the customers in versatile international markets, helps product development and adaptation, as well as “meticulous manipulation of key marketing tactical elements to target foreign customers with quality, differentiated goods”.

In this dissertation, a number of processes that meet this description have been investigated as part of the focus capabilities. Although the international market / marketing orientation have not been a focus of the study *per se*, results of the study indirectly confirm the arguments of Knight & Cavusgil that this aspect of organizational culture is an important contributor to a born global’s international competitive advantage.

The related processes identified in this dissertation include expansive environmental scanning, conducted through a number of channels, and collaboratively by the top and functional managers. These processes have shown to be a critical aspect of both the R&D-related and the managerial capabilities of technology born globals. Such an integrated and a wide-reaching approach enables the firms to be in-tune with the global technological development and be aware of the upcoming trends. Close customer communication enables development of well-specified and demanded products. The participation of the top management, as well as R&D and marketing managers in the customer and trade fair visits allows ‘getting everyone on-board’ as for the information about the current technological development and customer demands. This creates a common understanding of the technological and market environment, and facilitates well-informed discussions and an easier agreement on the firm’s strategies, product development plans and investment decisions.

The branding aspect of the born globals’ marketing activities has, to my knowledge, only been discussed in detail in one study (Gabrielsson, 2005). The investigation has been done on a rather high level, without

going into detail on which exactly practices a resource-restricted born global can undertake to build its brand, when it is important to start thinking about brand building, etc. The study of the branding capability in this dissertation has investigated a case study of successful brand building by a technology born global, which did not require much financial investment into marketing communications, did not involve advertising, and which ended in having successfully built a reference industrial brand, and a gradual building of a consumer brand using MNE partners' channels. This brand building process was based on the superiority of the born global's products and technologies and the reputation that the firm and its products have been building over time in the markets. The branding capability of born globals has shown to be a rather high level capability, which builds on three large capabilities: technological (or R&D-related) capability, collaborative (or the alliance) capability, and the marketing communications capability.

This article makes an important contribution to the discussion of the branding aspect of international marketing practices of born globals in the international entrepreneurship literature.

The article also makes an important contribution to the branding literature in investigating brand building strategies and activities of the specific type of firms with their unique challenges. Another side of the contribution is investigation of a realized possibility of building a brand in the international technology markets without significant financial investments.

- Unique intangible assets based on knowledge management
- Development of internationally innovative, knowledge-intensive products/services; focus on quality and differentiation
- Global technological competence

These three sources of international competitiveness are closely related. The first two aspects discuss the basis of the market offerings of born

globals: knowledge-intensive products or services based on innovative technologies, and on the subsequent ability of the firm to manage its knowledge assets and to continue developing internationally innovative and knowledge-intensive product/services. The last aspect in the list is defined by Knight & Cavusgil (2004:130) as “the firm’s technological ability relative to cohort firms in its industry. It facilitates the creation of superior products and the improvement of existing products, as well as greater effectiveness and efficiency in production processes.”

While these three factors have been named as sources of international competitiveness of born globals by many authors (Knight & Cavusgil 2004; Rialp *et al*, 2005 – based on a literature review; Knight *et al*, 2004; Gassmann & Keupp, 2007; Knight & Kim, 2009), exactly how the global technological competence and continuous development of internationally competitive and innovative products can be achieved by a small born global venture has not been discussed. In this dissertation, the question has been posed of not only how these objectives are achieved, but how are they conducted and sustained over time? A newcomer with a superior and novel technology may be able to enter a number of markets and receive a very warm welcome by customers due to the novelty of its technologies (which was also the case with the firm in this study). However, once other competitors with much higher resource endowments enter the scene, how can the born global SME sustain its R&D exploitation and exploration practices, production and price competitiveness so as to be able to compete with these new entrants? Aspects of the R&D-related capabilities that enable sustaining a born global’s competitiveness in the international markets over time are explored in the first articles, and this investigation is one of the major contributions of this dissertation. This article also contributes the R&D literature, which until now has not addressed this new type of firms with their unique objectives and challenges.

- Niche-focused, proactive international strategy; uniqueness of specialization in international value chains

- Narrowly defined customer groups with strong customer orientation and close customer relationships

These two sources of competitiveness of born globals previously discussed by Rialp *et al* (2005, based on a literature review) and Gassmann & Keupp (2007) have been observed in the research process for this dissertation, although they have not been a specific focus of the study. One of the contributions of the study of the R&D-related capabilities has been in concluding that ambidexterity is rather difficult for born globals (and probably other SMEs) to realize. The study has identified well-considered structured strategy and R&D planning and implementation processes, which enable these firms to channel their resources into strictly defined markets with a select customer group. Such approach enables an effective and efficient use of resources in the markets and through such business models, where the firms actually can compete on their own; as opposed to opportunistically spreading their resources to many markets, where they are continuously dependent on MNE partners for product development and sales. The structured R&D planning and implementation processes have shown to be a core element of the R&D-related and the managerial capabilities of technology born globals, and are an important contribution of this study.

- Intellectual property rights protection

This source of international competitiveness, highlighted previously by Gassmann & Keupp (2007), has shown to be an important aspect of technology born globals' R&D-related capabilities and of the alliance capability. The findings in these articles emphasize the importance of having a clear understanding of the firm's core competences, managing them, and in case of technology born globals – having a clear strategy, ongoing implementation processes and dedicated resources to protect their core know-how with patents and other means of IPR management.

- Networking and alliance building capabilities

- Leveraging foreign distributor competences and resources ‘on demand’

The networking and alliance building capabilities and strategies have been discussed to a large degree in the extant literature (Mort & Weerawardena, 2006; Freeman *et al*, 2006; Coviello & Munro, 1995; 1997). This is why these specific capabilities have not been investigated in this dissertation directly. Leveraging foreign distributor competences and resources ‘on demand’ (Gassmann & Keupp, 2007) is one of the important reasons why born globals seek out MNE and other partners. The networking and alliance building capabilities have shown their importance as part of the other capabilities that were in focus in this dissertation - R&D-related capabilities, branding capability and alliance capability.

Article 2 on alliance capability makes a clear theoretical contribution, as it investigates alliance management from the point of view of a specific type of firms that have their unique characteristics and challenges, which the literature on alliance management has not yet addressed (based on the literature review that preceded the study). These specific characteristics include a large imbalance of power between the collaboration partners in many instances – born global SMEs and MNEs; large differences in resource availability between the partners; and low transparency of the MNE for the born global. Most literature on born globals focused on the networking capability and the role of alliances in the international strategies of born globals, but not on the specific micro-issues of managing such alliances. The organizational skills that have shown to influence alliance outcome positively are internal and external assessment skills, need detection and coupling skills, asset protection skills, project management skills and termination skills. While a learning capability is proposed to moderate these relationships.

- The learning orientations and learning capabilities: market-focused and internally-focused

The discussion in section 8.2.1 in this chapter highlights the findings as for the learning processes in a technology-based born global and their evolution over time. They are found to be in line with the above suggestions of Weerawardena et al (2007), and the importance of the market-focused and internally-focused learning capabilities is shown to be critical to a born global's development long past the firm's establishment and rapid internationalisation stage. A contribution of this discussion is in the empirical investigation of the learning process in a technology born global, and their effect on the development of the firm's capabilities over time. Additionally, this research has been able to show empirically how individual learning evolves to the organisational level. Much of the organisational learning theory builds on this premise (e.g., Hedberg, 1981; Örténblad, 2004; Kim, 1993), but not many studies have been able to show this empirically. This is also a contribution of this study.

- Flexibility to adapt to rapidly changing external conditions

Born globals' advantage in their flexibility in adapting to rapidly changing market environments, highlighted previously by Rialp *et al* (2005), Knight & Cavusgil (2004) and others, has always been on the background of the discussion in this study, as it has specifically focused on technology-based ventures. The basis for the flexibility of born globals is their entrepreneurial nature, small size and short internal communication lines. The articles on R&D-related capabilities and the managerial capability make important contributions in discovering the means of preserving the entrepreneurial element in management of technology born globals, while shifting to the formalized strategy planning and management principles. The shift to more scientifically based management principles has shown to be important in ensuring long-term sustainability of the organizations, due to the need to have a stable and functioning organization that delivers on the promises to its customers and invests its limited resources in a maximally effective and efficient way. On the other hand, there is a need to keep a window for intrapreneurial initiative by the organizational members and a system

that allows pursuing unexpectedly arising opportunities, even though they are not in the formal 'roadmap'. The study has uncovered a way of incorporating a possibility for intrapreneurial initiative into the firm's formal strategic planning and implementation procedures. Furthermore, the studies of the managerial capability and the R&D-related capabilities have uncovered structures and processes that provide a basis for effective and ongoing internal communication, knowledge sharing and learning in relation to both technical and non-technical knowledge.

## 8.2 Organisational learning in the born global firm

To complete the discussion of these select capabilities and their contribution to the firms' long-term competitive advantage, I would like to conclude this dissertation with a discussion of the organisational learning processes, through which the capabilities develop and how they have contributed to the development of the case born global throughout its history. Organisational learning processes are the mechanisms, through which organisational capabilities are developed (Zollo & Winter, 2002). The importance of learning processes became increasingly evident throughout the empirical observations. Interesting observations have been made of how learning processes have developed from being carried out by individual actors in the organization, to being developed at the organizational level.

If we were to analyse the learning processes in the focus firm throughout the different stages in its history following Article 4, the learning processes were as follows:

1. *Conception.* The learning in this stage was happening on the individual founder's level, while he was using inputs from the individual experiential learning and the inputs he received from B&O that began applying his findings in their products already mid-way through his PhD project. The founder was also actively using the input as for the viability of his

technology from academics and industry representatives, which he received at industry and scientific conferences.

2. *Development.* At this stage, the firm already consisted of a small team of professionals. The learning was happening 1) on the individual level by each of them, 2) by the firm as a whole – through knowledge sharing from the newly hired employees, where some of them were very experienced engineers, and 3) from the semi-external source of the mother firm, which helped the born global to mature its technology into manufacturable products. This learning was happening on both levels of managing products and processes.
3. *Commercialization.* At this stage, the amount of learning from external sources has significantly increased. The firm was getting a great amount of input about its technologies and products and their suitability and marketability from the market. At this stage, the foundations of the firm's branding capability, and the wider marketing capability began to be shaped – the capabilities that form one of the key backbones of organisation, and serve as both the communication and sales tool, but also as the key means for collecting market information and input for the firm's R&D activities. It was only natural for the born global's founder and other key decision makers to participate in the marketing trips in the early years of the firm due to its very small size. But the benefits of the senior managers' personal participation in market and customer trips has been appreciated and the practice preserved throughout the firm's history until today. The firm's internal knowledge creation processes were characterised by a lot of explorative activities, which were not always structured or planned. From its early days, the born global closely collaborated with the academia, where numerous engineering students were doing their projects or a part of studies at the firm. The students being a less expensive



workforce helped the born global to try applications of its technologies in new fields.

4. *Diversification*. In this stage, learning from external sources was added by the more focused way of learning through strategic alliances. Although learning was not an expressed objective of any of the alliances, it was certainly happening: learning about technology application into specific types of products, about the market product requirements, the players and competition in the markets, and finally, about project management in alliances.

However, internal learning in the firm was only partly effective. It was effective inside specific project teams/departments, but was deteriorating between departments – due to the artificial distance created between them by the disagreements between the two senior technology managers (the Founder/CTO and the Director of Product Development). The firm also had trouble retaining talent – and with it, the tacit knowledge, as some of the engineers felt overworked and disillusioned and left the firm.

5. *Growth* (which can also be called a period of *stable growth* in the born global's history). At this stage, it can be said that the learning that has been accumulating from the previous stage has found its implementation with the partial management change and introduction of new managerial principles in the organisation. The firm's effective externally oriented learning processes have remained intact, but internal processes have changed significantly. 'Scientific' or academic principles of strategic management have replaced the less structured and less planned strategic approaches. The management decided to pursue only the profitable markets, where the born global 1) could operate on its own, and 2) had a growth potential. The resource allocation for R&D projects followed the strategy: funds were allocated in a planned manner to the projects that had a proven market potential. These strategic

management approaches in the end were what secured the firm's financial stability and even growth through the years of financial crisis and ensuing international recession.

### 8.2.1 The learning processes in the born global's operations

If we were to take a high-level overview of the learning processes of the born global throughout its history, the processes can be divided into two categories: market-focused learning and internally-focused learning (*cf.* Weerawardena *et al.*, 2007). Both types carry the elements of technological learning (Zahra *et al.*, 2000) and managerial learning, but they are very difficult to separate discreetly, since the firm's business is technological development, and all of the market-oriented learning relates to new product developments. While the internal management processes are aimed at organizing technological knowledge creation and implementation. Below, these two sets of organisational learning processes are discussed separately.

#### Market-focused learning

It seems that the born global has always been very strong in externally-focused learning (the learning from external sources of knowledge). The processes underlying this learning: wide-reaching environmental scanning, close collaboration with both existing and potential customers, proactive marketing to them, participation of key decision makers, as well as representatives of different functions in the market trips, had been introduced into the firm's activities nearly from the establishment, and have remained a part of its 'DNA' – continuous processes until today. These learning processes have contributed to the development of many of the firm's competitive capabilities and have formed the backbone of the firm's long-term competitive advantage.

The processes of market-focused learning have contributed to developing *all* of the firm's competitive capabilities discussed in this dissertation. They have contributed to developing the R&D-related

capabilities through enabling active means for acquiring the market and technology development information, thus helping to plan and specify demanded and timely products. They have helped to build the alliance capability by enabling the development of the need detection and coupling skills by the firm's management discussed in Article 2 and thus helping to prepare attractive product and business proposition to potential partners. The learning processes have contributed to the development of the branding capability (as well as the wider marketing capability, discussed more contextually throughout this study) through the relationship building with customers and eventually building mutually beneficial branding and marketing arrangements with them. Finally, these processes contributed to developing the managerial capability by providing the channels for the firm's management for collecting the information about the markets and wider technological developments, which would then inform the firm's internal strategy, resource planning and business model formulation.

### Internally-focused learning

The born global firm has been excellent at creating technology knowledge and has been effective in building up its absorptive capacity (Cohen & Levinthal, 1990; Zahra & George, 2002a). The firm was able to build up strong processes for *potential absorptive capacity*, which consists of knowledge acquisition and assimilation and makes the firm receptive to acquiring and assimilating external knowledge, and thus, serves as the basis for its competitive advantage in the long term (Zahra & George, 2002a). This has been done by 1) hiring highly professional engineers who have a strong interest in the firm's technology field (this has been one of the principles of selecting personnel expressed by the CEO), 2) collaborating with the academia and thus educating the firm's future employees, 3) actively using the external sources of knowledge discussed above. By having an excellent internal team and having established routine external search practices, the firm has been very effective in incorporating external technological and market knowledge into its technology and product developments.

The firm's *realized absorptive capacity* (Zahra & George, 2002a), consisting of the processes of knowledge transformation and exploitation has, on the other hand, changed rather significantly throughout the firm's history. In the earlier stages, the processes of knowledge transformation and exploitation were rather chaotic. The engineers were often asked to work in unrealistic time frames, and on numerous projects, which put conflicting and stressful demands on them. The firm's R&D processes were often led by the results of the entrepreneurial search of the founder, who would receive many interesting offers for potential projects during his market trips, and would be tempted to try developing the firm's technologies into all those directions. This approach certainly functioned in the firm's early stages, as the born global was able to obtain many beneficial orders and collaborations with partners on customized and other types of products, which brought in revenue. On the other hand, when the inefficient planning of resources began resulting in suboptimal performance, i.e. failure to deliver on promises to customers on time, a failed strategic alliance, and a loss of valuable colleagues and expertise when a number of engineers quit, feeling overworked and disillusioned about the founder's management style, it became apparent that a change in the firm's management was necessary.

Knowledge sharing is critical for capability building in organisations (Kale & Singh, 2007). In the case born global, internal knowledge sharing and learning was suffering for a while due to the internal division caused by different managerial approaches inside the organisation. This division affected both formal and even informal knowledge sharing among the engineers.

After 2008, the firm's managerial approach and as a result, its learning structures and processes, changed significantly. The firm began to be operated by a single set of managerial logic. The R&D unit became one, under one leader. Knowledge sharing has become ubiquitous, as the engineers began to be appointed to new assignments based on their expertise – and not on belonging to a specific department. The learning

among the top and other levels of managers has become more coherent and continuous, as the top management team works very closely on all issues, involving all other managers into the discussions relevant to them. Furthermore, the communication and information sharing in the whole organisation has been significantly improved by the introduction of regular formal forums for discussing company news, ongoing developments, achievements, as well as mistakes.

The specific processes that govern the internally-focused organisational learning (which has been discussed or mentioned in the dissertation) include individual experiential learning, ongoing collaboration between all levels of management, ongoing collaboration between the different functions, collegial decision making in the management, the ongoing forums for knowledge sharing – both formal and informal, processes for intrapreneurial initiative from all employees, and retaining and sharing technological knowledge through a database. These processes have particularly contributed to the development of the R&D-related, alliance and managerial capabilities through providing the structures for sharing the technical and managerial knowledge developed by the firm's individual employees, and by assimilating, transforming and exploiting the knowledge obtained from external sources (*cf.* Freeman *et al*, 2011).

The above discussed processes have significantly contributed to the development of the R&D-related capabilities in that they have enabled to optimise and structure the R&D-related processes to allow efficient and effective use of resources. Internally-focused learning has enabled implementation of the 'scientific' strategic management principles, which began guiding the firm's development in a more structured manner and with a view to the firm's core competences and its market position; instead of a not necessarily well-considered entry into the markets where there is a customer offer for a project. While having introduced more structured R&D planning processes, the internally-focused learning that has accumulated over time has led to establishment of an open window for intrapreneurship and responsible initiative in that anyone in the firm has a chance to present a well-

grounded proposal for a new product/technological development, which will be considered by the top management. Finally, the learning has led to the establishment of routines, where the organisational rules and structures are not only put on paper, but are strictly followed.

The firm's alliance capability has been improved by incorporating the learnings from the previous successful, as well as failed alliances. I.e., the positive experience with careful IP protection (also relating to the R&D-related capabilities) and drafting detailed contracts for each collaboration are strictly followed. While the shortcomings with the lack of a proper project manager and a stable project team for each alliance that had led to the failure of alliance 3 (discussed in article 2) has been addressed, and currently, a well-defined team of engineers and a dedicated project manager works on each of DBG's collaborative projects.

Finally, the firm's dynamic managerial capability has developed quite significantly due to the internally-focused learning processes. The strategic management processes discussed above in relation to the R&D-related capabilities are also a part of the managerial capability, as the firm's business is technology and R&D, and general management cannot be separated from its innovation and R&D management in a small venture. The processes of ongoing collaboration between all levels of management, ongoing collaboration between the different functions, collegial decision making in the top management team and establishing practices for effective internal communication are actually the core processes of the managerial capability. Through them, the firm has obtained a cohered management focus and style throughout the organisation, together with effective knowledge sharing processes involving all employees.

### 8.2.2 The most significant transition that has resulted from learning

Having conducted this analysis, it can be concluded that the biggest change resulting from learning that happened throughout the firm's history, besides its ongoing technological learning that is represented in development of technologies and new products, has been the firm's *internally-focused managerial learning*. The introduction of the externally-focused learning processes discussed above could, to a large degree, be contributed to the founder and his highly entrepreneurial and internationally-oriented approach to business. While the changes that have resulted from the internally-focused learning can be contributed mostly to the firm's current CEO and the new management team. As the business was maturing and there was a need to start introducing more stable organisational structures, it seems that the firm's internal learning was happening, but was being held in a 'latent' state – it was not being implemented due to the opposition from the founder and the division inside the organisation. As soon as the founder stepped aside, results of the learning have found their way forward and were implemented at a high speed and with high effectiveness. These changes have yielded highly positive results, as shown in the firm going through the recession with a positive financial performance and year-on-year growth. (It is not necessarily that the founder had to leave completely, as long as he would have agreed to yield the responsibilities of strategic and operational management to the more professional manager.)

The discussion in articles 3 and 4 and the conclusions so far might have given an impression that I strongly advocate the implementation of strict structures in an SME as early as possible – i.e. the exploitation structures. Exploitation calls for stable routines, path dependence, mechanistic structures, stable markets and technologies, continuous reach for resource efficiency and cost reduction, control and bureaucracy (Trott 2008; He, Wong 2004). While a lot of literature on exploration vs. exploitation in organisations (Trott 2008; He & Wong

2004; Tushman & O'Reilly 1996) would argue that creative processes of technological and business innovation - a.k.a. exploration structures, require room for creativity, achieved in organic and flexible structures, through autonomy and improvisation in activities, path-breaking approaches, and research in emerging markets and technologies. The need for continuous innovation and exploration is imminent for any organization, particularly for technology-based ventures whose technological lead must be constantly sustained against competition. A fundamental challenge for most organizations, therefore, is to be 'ambidextrous' – to be able to balance exploitation of the firms' existing technologies and products with exploration for new innovations (Tushman & O'Reilly 1996; He, Wong 2004).

The tightening of the born global's R&D resource planning might lead to a possible loss of innovativeness by the venture. Based on the study, it appears that the wide-reaching environmental scanning processes give the firm a wide overview of the technological development that is happening in the fields that they are already operating in, as well as in other fields where their technology could potentially be applied. This wide scanning also enables the firm to observe and act upon the ongoing merger of different technologies into products of the future. The firm seems to have a good overview of where the technology is going and the areas that they should be investing into in order to keep their competitive position in 2, 3, 5 years.

It is certainly difficult to know the born global's future and its international technological position will turn out to be in time. The firm tries to stay creative 'in an informed way', by allocating research resources to the projects that have been considered to have a future, considering input from the environmental scanning, discussions with customers, and which have been included into the official R&D roadmap. On the other hand, the engineers' schedules have been optimised, so that they generally do not have specially allocated time for creative thinking and development. This is the point that I arrived at in article 1- that ambidexterity is very difficult to achieve for SMEs



who have a constant strain on their resources. On the other hand, it is impossible to separate the effects of the deep international economic recession from the operations of the firm under more 'normal' market conditions, as most of the study has been conducted in 2008-2011, the recession years. 2008-2009 was also when the 'scientific' management principles were implemented in the venture. As the markets crawl out of recession, it may be that the born global would be able to hire more resources (they do currently have advertise a few open positions) and thus obtain a little slack on each employee's time in order to allow pursuing explorative projects. These decisions will depend on the management's approaches and priorities.

This discussion of the learning processes in the this case study seems to support the literature that stress a strong influence of the managerial approach and style of the key decision makers in SMEs and born globals on their organisational learning processes (Zhang *et al*, 2006; Weerawardena *et al*, 2007). The importance of triggers to start the organisational learning process, which can be competition or an internal crisis, or both (Zhang *et al*, 2006) has also been supported by the findings - a combination of both has been the case in this study.

The findings also support the literature that discusses the critical importance of an externally-oriented learning style (Weerawardena *et al*, 2007; Freeman *et al*, 2011), and the international entrepreneurial orientation (Knight & Cavusgil, 2004) / international orientation (Knight & Kim, 2009); as well as the international market / marketing orientation (Knight & Cavusgil, 2004; Knight & Kim, 2009) in a born global's early and rapid internationalisation stages. The argument of Autio *et al* (2000) has also received support: developing internationally-oriented learning practices by a young venture creates the internal routines (or processes) that provide the firm with the 'learning advantages of newness' – embedding these routines into the firm's DNA and making its processes well-suited to the diversified international operations. While in the later stages: the growth (or stable growth) stage, the introduction of structured and 'scientific' strategic-

and operations management practices have shown to be critical. This finding supports the argument of Bingham *et al* (2007) for the fundamental value of introducing structure into young ventures' activities.

This discussion points to the fact that besides the ongoing technological learning, which is the backbone of any technology-based firm, the market-focused and internally-focused learning capabilities discussed by Weerawardena *et al* (2007) remain critical also beyond the internationalisation phase of SMEs and are vital for their long-term survival and competitive advantage. It is highly important for any organisation, and especially for a born global to always stay in touch with its immediate customers and with the wider economic, technological and social environment in order to remain relevant and to be able to sense the upcoming technological and wider social and economic changes. A born global also needs to be able to implement knowledge obtained from external sources, as well as the knowledge gained through its internal experiential learning, both technological and non-technological, into its processes and strategies. In this way, their continuous renewal can be achieved in order to match the changing external and internal organisational environments. This point was at the core of the discussion in Article 4 on the dynamic managerial capability of born globals.

## 8.3 Practical implications

In order to make the findings of this dissertation as approachable and useful for practitioners as possible, the specific managerial learnings and guidelines that can be inferred from each of the articles are summarized in the following sections.

### 8.3.1 Practical recommendations for R&D management

1. *Balance of engineering expertise in the firm.* The management should try to hire the necessary expertise into the firm from

its early days. As has been stated by the interviewees numerous times, it is one thing to make a working product prototype at a kitchen table; and it is a completely different task to make a high-quality, robust product that corresponds to all the international standards, can be manufactured *en masse*, and can deliver a long operating life. The original technology inventors / researchers (R of the R&D) need to be supported by experienced developers, as well as with specialists that have experience in manufacturing coordination and quality control.

2. *Defining the core capabilities early and protecting them.* The management should try to define the firm's core capabilities early on, and make sure to keep them in-house. They are the firm's reason for existence. If they are outsourced or shared with partners in any way, it is easy for a small firm to lose them. Numerous collaborations with customers can lead a born global into several application markets, where it is rather easy to lose focus of the firm's core competences.
3. *Strategic networking and alliance building.* Collaborations with bigger players can be very beneficial for a born global: through them, the firm can access the resources, production facilities and distribution channels. However, the firm's management needs to think strategically and keep the long-term perspective in mind. A strategic market analysis needs to be made every time the born global is offered a collaboration: what will this specific strategic alliance mean in the long term? How does it use or contribute to developing the firm's core competences? Will it bring the firm into a market where it cannot compete on its own? Should an investment be made into such a market?
4. *IP management from the start.* The core competences and technologies must be protected by patents and other IP management mechanisms in order to avoid possible opportunistic behaviour by alliance partners and other market

players, especially from the countries with weak law-abiding cultures. Therefore, an IP management strategy must be developed and implemented in a start-up very early on. It does need to be considered carefully, as patent writing and submission are intense on human and financial resources. Sustaining patents in many countries carries significant expenses, which increase year-on-year. Therefore, a smart strategy needs to be developed based on the firm's key operation markets and alternative means of IP protection (i.e. notes of invention signed with a notary, presentation of non-key inventions at scientific conferences in order to prevent other firms from patenting them (information presented at public forums becomes a public good)).

5. *Developing strong marketing skills and wide-reaching environmental scanning processes.* No born global can survive without well-developed marketing skills. In technology markets, a marketing capability is both a vital channel for input information for new product development, and a critical sales channel. The managers should develop processes for regular environmental scanning that encompass a wide scope of sources. This is extremely important for effective and timely planning of new products and for specifying them correctly to the needs of customers. The important sources are:

- patent databases,
- specialized industry publications and relevant mass media,
- visiting key trade fairs in the markets of interest,
- attending professional and scientific conferences,
- discussions with existing and potential customers,
- being in dialogue with the world's technology trend setters in relevant fields, i.e. Apple in consumer electronics. These companies have a strong influence on

future development of global technology and product applications.

6. *Introduction of technology and resource planning structures into the firm.* While the first years of operations of an start-up will most probably be characterised by a creative search process, several years into the firm's history, technology and resource planning processes and structures need to be implemented. By this time, the firm would most probably have entered several markets, it would have several collaborative or customized development projects running, would have to meet customer obligations on a number of projects, and will be continuing its entrepreneurial search. In order to optimise the use of the firm's limited resources and to channel them into the most strategically important fields, as well as to meet the firm's obligations to customers, a technology or an R&D map and a clear project selection process for it need to be developed. Strategic markets needs to be defined and resources committed in order to sustain the born global's leading position in innovation and product/service leadership. Spreading the limited resources over too many markets can erode the firm's leadership positions and therefore, its competitive advantage. An executive committee needs to be appointed to decide on the R&D roadmap, and the decisions made through this process need to be followed through (as opposed to remaining only on paper).
7. *Intrapreneurship.* The technology and resource planning processes, however, do need to contain a window for intrapreneurship. It cannot be assumed that the top management would have perfect knowledge or information. Each employee in the organisation (many of whom will be highly specialised and knowledgeable engineers) should have an opportunity to develop their own projects and present them for consideration to the decision making committee.

8. *Continuous exploration.* In spite of the tightly planned resources, explorative R&D should not stop. Innovation and better products are the basis of competitive advantage of technology born globals and technology SMEs in general. While it is unlikely that a smaller firm would be able to fund full-time explorative research, a sustainable strategy for allocating resources to exploration, which the firm can afford and which would bring value to its R&D, needs to be developed.
9. *Participation of different functions and levels of management in marketing and environmental scanning.* Participation of top managers in the marketing trips, as well as participation of both R&D and marketing managers is very beneficial to strategic and product planning of technology born globals and their market and customer knowledge. In this way, the managers have an opportunity to experience the ongoing technological and market developments first-hand at trade fairs and key customer visits and discuss their findings with one another. The top and R&D managers have the possibility of meeting customers face-to-face and talk about their needs. In this way, a holistic and a well-informed picture is formed by all the key decision makers, which facilitates well-informed and consensual technology and product planning. It is certainly not expected that all the top managers will be going on all sales trips. They can be rotating and participating in select ones.

### 8.3.2 Practical recommendations as for general management

1. *Coherent and consensus-based decision making by the top management team.* Decision making in the top management or key decision makers' team needs to be made coherently and in a consensus-based manner, so that different opinions are heard. If a single individual has an overwhelming power in the decision making, the decisions risk to be one-sided, following one person's situational understanding and ambitions, which might not be in the best interests of the firm. The situation becomes even worse if conflicting managerial decisions are made by different top managers, which negatively affects the firm's operations and efficiency.
2. *An external supervisory body, i.e. a board of directors, is valuable in solving difficult decision making or managerial conflicts in the organisation.* Such situations can lead to division in the firm, duplication of effort, loss of communication and lack of knowledge sharing inside the organisation, exclusion of some experts from product-related decision-making, and other problems. Such ties need to be solved by an external authoritative party, i.e. the Board of Directors (which is normally appointed by the firm's owners/investors).
3. *Processes and structures for effective internal communication and knowledge sharing.* It is highly important for the top management to implement effective structures and processes for effective internal communication and knowledge sharing. There should be regular formal forums for informing employees about all the ongoing events and projects, discussing learnings from them, discussing successes or mistakes. Channels for informal communication should also be open. The management should try to build an open and a collaborative atmosphere in the organisation, where the

engineers would be willing to share information with one another freely and help one another with their expertise. Furthermore, specialists need to be assigned to projects based on their expertise, as opposed to which department they belong to. Meaning that project objectives should come before strict departmentalisation. In this way, effective sharing of knowledge, including tacit knowledge, can be achieved among engineers, which may be knowledgeable about different aspects of applying a specific technology.

4. *Knowledge management.* All the technical knowledge of the organisation has to be managed carefully, via special electronic and other means. The managerial knowledge for specific functions should also be managed: externalised, preserved and shared with new managers.

### 8.3.3 Practical recommendations for alliance management

1. *Careful assessment of potential partners.* Before starting any collaboration or alliance, it is very important to define its specific strategic and tactical objectives. A partner needs to be searched for according to these objectives. It is critical to assess the partner's technological capabilities and capacity before starting a development project, and not simply rely on the partner's good name. Often times, the collaboration partner will be an MNE, and its transparency to the born global will be very limited. Nevertheless, a critical evaluation needs to be conducted in order to make sure that the partner will be able to contribute with all the necessary expertise, resources, equipment, and commitment.
2. *Internal assessment.* When formulating a collaborative project, all expert voices in the organisation must be considered. Decisions as for target product specifications and the timeline should be made in a consensus (as opposed to relying on the judgement of the highly enthusiastic entrepreneur). In other words, the engineers that will actually be doing the work



should also be heard and their evaluations should be included into the considerations. While any new product development involving a new technology carries high uncertainty as for the development time, such careful approach would allow minimising the risks of delays and destroying the customers' product rollout schedules.

3. *Marketing skills.* Born global needs to be able to develop attractive proposals to potential partners in order to make them interested in entering into collaborations. In their early years, born globals are most probably small and relatively unknown firms. A born global needs to be well familiar with the potential partner's product line and needs to know, how its technologies, products or services could benefit the partner. The benefits need to be presented as factually as possible (e.g., replacing a component in the partner's product with the born global's products and letting the partner assess the difference). Furthermore, a strategic business proposal needs to be developed where the born global could show specifically how this collaboration will benefit each of the parties – and especially the potential partner, strategically and financially, both in the short and the long term.
4. *Drafting a detailed contract.* A contract has shown to be the central coordinating and controlling mechanism of alliances in this study. According to it, all the key stages are initiated and the progress and the results are evaluated. The contract should include all details of the collaboration: detailed target product specifications, development timeline, contribution of resources from all sides, the payment schedule, division of revenue from the sale of the ready product, as well as conflict resolution terms. If more than one product is to be developed, it is important to ensure that the resulting products will not compete with each other directly, and that they do not compete with other products of any of the partners.

5. *Project management.* Professional project management is paramount to success of collaborative projects and strategic alliances. (No matter how commonsensical this sounds, SMEs might not prioritize this due to limited human resources). A dedicated project manager should be appointed for each alliance, and it is highly desirable that the project manager is not at the same time a developer in the project (or at least that development is not his/her major task). Engineers often get very involved into their development work and may lose a holistic overview of the project's progress. Due to the resource limitations, one manager could be managing more than one project. In a strategic alliance, especially one involving R&D, there may come serious and large issues, so there must be a dedicated project manager to handle them and make sure that the development and the overall alliance flow is on track.
6. *Alliance termination.* Since an SME cannot afford to spend resources on low-performing collaborations, the project manager needs to have the big picture and evaluate, whether the alliance is still beneficial for the born global or whether it is time to stop it. When an alliance is being terminated, the managers' negotiation skills are vital: it is highly desirable to keep the respectful and trustful relationship with the partners and keep their good faith in order to preserve a window for future sales, collaborations, and generally good references in the industry. The reputation built through such references is crucial for success of the smaller firms in B2B markets.
7. *Learning from alliances.* It is highly desirable to manage both the technical and the managerial knowledge acquired from various alliances. The technical knowledge can be stored in relevant databases. As for the managerial knowledge, in most firms, due to the constant strain on resources, this knowledge will most likely be stored with a few key decision makers that participate in negotiating most of the firm's alliances. However, such approach is unsustainable. If one or more of

the key managers decide to leave the firm, this highly valuable accumulated knowledge will leave with them. Furthermore, it is likely that evaluations would only be done for unsuccessful projects in order to report to the investors on what has gone wrong – which is also a suboptimal practice. It is highly advisable to:

- Evaluate every single alliance or large-scale collaboration on several key dimensions and highlight the major learnings.
- Create a database or another form of document and enter all of the learnings into it.
- Share this knowledge proactively with new project managers, senior managers, and other new alliance participants.

#### 8.3.4 Practical recommendations for brand building

1. *Brand value in B2B technology markets.* In such markets, brand value is primarily based on substantial qualities of the product offering: the top characteristics are technological specifications, price and distribution capabilities of the manufacturer. B2B engineers and purchasing managers look first of all at the content of the product/service offering and the supplier's ability to deliver. And after that – at the firm's reputation or name in the industry. Therefore, building a brand in technology B2B markets is done based on the factual substance of the products: their performance parameters compared to the competition, their quality, robustness, industrial design / ease of implementation into the customer's products, adherence to international standards, and reputation of the products.

The other brand value aspects are: Distribution characteristics: strength of distribution chain, development time and the ability to deliver on time. The company's

reputation in the industry as for its ability to deliver on time is also a factor. In the Company characteristics, important aspects of brand value are: company name and financial health, company reputation, reputation of the firm's key engineers in the industry and related scientific circles, trust toward the core team, and reputation of the country of origin in the technology field. In the Support Services category, professionalism of the born global's engineers and business specialists are important, as well as the their collaborative qualities and the business culture of the organisation. (Full visualization of the brand value model in B2B technology markets is presented in Figure 6.2).

2. *Brand as an integral part of a born global's original firm- and product strategy.* Building a recognisable brand is very important for a born global in order to distinguish itself from the competition. It is, therefore, important to have a brand building strategy as a part of the original company and product strategy. A brand is, after all, a sum of everything that is known about a firm and its products by all external stakeholders. It is therefore important to define brand values rather early in the firm's history and communicate them clearly and consistently through all channels: during sales visits, exhibitions, through marketing and technical materials, on the firm's website, etc.

It is therefore important for the born global to have a strategy as for what kind of brand it wants to build: only B2B or also B2C. The firm should conduct possible (financially viable) marketing activities to promote the brand from its side and be prepared for collaborations with consumer product manufacturers. This means hiring a marketing communications specialist (part- or full-time), developing the brand's visual identity, marketing materials and texts, and keeping a dynamically updated website. If a customer comes with a proposal for a brand collaboration, the born global

needs to be prepared and have the resources / texts / photos ready or develop them for the partner.

3. *Word-of-mouth reputation building.* In B2B markets, a firm's reputation or word-of-mouth marketing is a significant contributor to its brand in its industry and beyond. Therefore, it is important to understand that every single experience that a customer or a supplier has with a firm will be contributing to building its reputation and relative trustworthiness in the industry. In technology B2B markets, collaboration with customers happens on a very detailed engineering level. Therefore, customers have an abundant possibility to get acquainted with the supplier and with the professional level of both its engineers and business specialists. Therefore, every employee's behaviour needs to be aligned with the brand values.
4. *Building a B2C brand through customers' channels.* If a born global's component product or service adds significant value to the end product in a way that end customers can experience it, this gives the born global a basis for building a component B2C brand. End-product manufacturers are often interested in differentiating their products through specialised high-quality components that add a specific feature or quality to them. If a born global is interested in building a B2C brand, it should be proactive in offering co-branding collaborations to the end-product manufacturers. The end product manufacturers' marketing channels can then be used by the born global to build its brand at a low expense.
5. *Brand collaboration as part of the product / service offering.* A more advanced approach to brand building is to include co-branding as a part of the firm's product or service offering, as a ready solution to a customer's request. This approach is likely to be viable some years into the born global's history when it has already earned a name for itself in the industry. The born global can develop a clear brand collaboration

proposition, stratified to several levels of possible collaborations – depending on how much the born global wants its brand to be associated with a specific firm (some manufacturers would not want to promote a component brand if a lower-level market player is already promoting it). Such brand propositions can then be offered to customers interested in co-branding.

## 8.4 Quality Issues

There is much discussion in the literature on measuring quality in qualitative studies. It is especially difficult to discuss quality of research conducted in the critical realist tradition, as it has a contingent, contextual, and personally interpretive nature (Miles & Huberman, 1994). I have chosen to follow the quality dimensions outlined by Miles & Huberman (1994) because first of all, they present a thorough discussion on the topic and take an explicitly critical realist perspective (p. 277). Secondly, these are very well recognized authors in the field of qualitative research methodology. Thirdly, because their discussion overlaps with that of other authors (Silverman, 2005) and hence, represents not only their own position, but the one taken by a wider academic community. In order to judge the quality of conclusions of one's qualitative research, Miles & Huberman discuss the dimensions of objectivity/ confirmability; reliability/ dependability/ auditability; internal validity/ credibility/ authenticity; external validity/ transferability/ fittingness; and utilization/ application/ action orientation. Below I discuss how the issues posed by each of these dimensions have been addressed. It is, however, ultimately up to the readers to judge, whether and how much this research stands up to the high standards of the wider scientific community.

### 8.4.1 Objectivity / Confirmability

Under this dimension, the relative neutrality and “reasonable freedom from unacknowledged researcher biases” (p. 278) is assessed. This dimension is sometimes also called ‘external reliability’, it emphasizes replicability of the study by others. Below, I address the queries relevant to this dimension discussed by Miles & Huberman (*ibid.*).

Throughout the study, the research methods have been explained as clearly and openly as possible. This has been done both in the Methodology section, and in each separate article. Due to the limited space afforded to articles, some of the middle steps in the analyses have not been included into the articles. However, every attempt has been made to show how the conclusions have been reached: a detailed discussion of these steps is presented in section 3.8 on Data Analysis.

My findings might have been affected by the thinking and opinions of the case firm’s leaders and specialists that were interviewed. However, the observational data and the general knowledge gathered about the firm though the years of working there has always been used to triangulate the data obtained through the interviews. With so much time spent as an insider in the organization, my thinking might have converged in some ways with that of the firm’s top managers. On the other hand, while spending about half of my time at the university, I was always confronted by the principles of critical and reflexive thinking, taught in our courses and is generally prevalent at our department. Thus, the studies and analysis have always been approached through a reflexive lens. I spent the last 2 years of the project being a full-time researcher, hence I had the time to ‘de-couple’ from the case firm and carry out the analysis more critically. Two of the articles – on the R&D-related capabilities and the dynamic managerial capability, were written after I finished working for the firm; and the article on alliances underwent a major re-writing in the same period.

The interview transcripts and my field notes are available in full for anyone's inspection.

#### 8.4.2 Reliability / Dependability / Auditability

This quality aspect deals with whether the process of research was consistent, reasonably stable over time and across the researchers and methods. Below is my thinking on these issues following the research queries posed by Miles & Huberman (1994:278).

Although I did have a general idea of which organizational capabilities I wanted to study when I settled down on the final research proposal (in winter 2009), the choice has slightly evolved. The research questions were arrived at through an iterative process as the study progressed, as I was learning more about the organization and its different operations, and as my theoretical knowledge was growing. The 'quality control' of the research questions vs. the corresponding methodology, theoretical discussion, analysis and conclusions have been done by my supervisors, and for some of the articles – by the journal reviewers and the Lund University Working Paper Series editors. A number of re-writes of each article following these comments have been done to bring them to their current state.

My role in each of the articles has been clearly described in the articles and is summarized in table 1.1. In the co-authored articles, I was the only researcher collecting and coding the data, as I had a relationship with the case venture.

The findings did show parallelism across different data sources – i.e. the observations and the interviews. Although some of the data were only obtainable through interviews with the firm's top officials – i.e. the events and decisions made during the turbulent year 2008. The interview accounts of the two top officials (the current CEO and CTO) did converge.



A systematic effort has been made in holding a detailed and a specific discussion of the theoretical constructs that were being applied in each of the articles. In this way, each discussion of organizational capabilities contains a deliberation of what specifically is meant by the term, based on the literature, and which specific capability elements were being investigated (although the conceptualization of the capability elements changed after the first article on the branding capability had been written). The relevant functional processes that had to be addressed in studying a specific capability (i.e. alliance capability, R&D capabilities, brand management, knowledge management) were drawn from the literature.

Careful considerations have been given to collecting data from all the relevant actors. The interviews with the firm's top officials predominate the interview list because I have learned through experience that the top officials had the most comprehensive and wide-reaching knowledge, as compared to other organizational members. The other employees' knowledge was more narrow and specialised. On the other hand, the managers and engineers were interviewed in discussing specific functions or projects. The alliance partners in article 2 have not been interviewed: it was against the business interests of the born global, so it would have been unethical of me to do it. Furthermore, the article inspected the alliance capability from the born global's perspective – not from the MNEs' or the network perspective, so the data collection methods were fair. Among the former employees, the founder was interviewed after he had left the organization.

#### **8.4.3 Internal validity / Credibility / Authenticity**

This aspect deals with the truth value of a study. Do the findings make sense? Are they credible to the people in the study and to the readers? Do the readers have an authentic portrait of what they are looking at? (Miles & Huberman, 1994).

It is clearly up to the readers to evaluate this aspect of quality, as it is difficult to perceive my own writing as an independent onlooker. Below are some of my own humble thoughts on only a few of the issues discussed by Miles & Huberman (1994:279).

Because various aspects of operations of the case company are discussed in the different articles, as well as in Methodology and Methods chapter, and because only one firm has been studied, the account of various activities is considered to be highly comprehensive. As discussed, the data obtained through different methods did generally produce converging accounts.

In the guiding theoretical frameworks, an effort has been made to reach broadly in order to see if there were relevant discussions in other theory fields besides international entrepreneurship. For example, in the article on R&D capabilities, the R&D and innovation literature on SMEs and NTBFs has been reviewed. In the article on the branding capability, the literature on marketing by NTBFs and on B2B marketing have been reviewed. In the article on managerial capability, the literature on new firm and NTBF development and knowledge management was used.

All the articles have been presented to the CEO of the case venture, and the article on R&D-capabilities – also to the CTO. In general, they agreed with the conclusions. Only small corrections on their side were made, mostly on small factual errors in the accounts.

#### **8.4.4 External validity / Transferability / Fittingness**

This aspect deals with the generalizability of the findings and their larger impact. Are they transferrable to other contexts? How far can they be generalized?

The difficulty of generalizing from a single case study has been used as an argument against using single case study designs by some authors (Eisenhardt, 1989). In the critical realist perspective, however, causation is not understood as a model of regular succession of events,

as in the positivist methodology. Therefore, explanations need not depend on finding these regularities. Instead, explanations depend on identifying the causal mechanisms, their interplay with one another and the context, “discovering the nature of the structure or object which possesses that mechanism or power.” (Sayer, 2000:14)

There is more to the world (...) than patterns of events. It has ontological depth: events arise from the workings of mechanisms which derive from the structures of objects, and they take place within geo-historical contexts. This contrasts with approaches which treat the world as if it were no more than patterns of events, to be registered by recording punctiform data regarding ‘variables’ and looking for regularities among them. (Sayer, 2000:15)

The research methodology in this study has been selected to fit the study’s purpose: to define the key organizational capabilities important to competitive advantage of born globals in the long term, discovering the complex component mechanisms of these capabilities and studying the best practices in enacting these mechanisms. The strength of the longitudinal approach is precisely in being able to consider the different mechanisms in their context, tracing the causal mechanisms and thus being able to find the most suitable causal explanations of specific outcomes – the ones most consistent with the data (Easton, 2010).

As Easton (2010) discusses, some phenomena can be explained by building from unique mechanism and contingent variables. Others – mostly those closer to the natural world, are explicable in terms of rather uniform causal mechanisms. However, most phenomena can be explained by a mixture of the general and the specific. The case method has the task of uncovering the structure of underlying reality in each case and investigating to see what can be added to the theory in a way of confirmation and/or articulation. This is exactly what has been done throughout this study: uncovering the underlying mechanisms of specific capabilities and comparing them to the extant theory, and thus either building new theory or specifying the existing theory for the case of technology-based born globals.

Once again, following Miles' and Huberman's relevant queries (1994:279): the findings are analytically generalizable to other technology-based born globals that deal with developing and manufacturing *physical products*, as opposed to service providers or software- or design developing companies. Those would most probably have a different set of challenges to deal with. However, the born globals that deal with developing new technologies and implementing them into physical products would have a similar set of challenges: the need to develop resource-demanding and commercializable products with very limited resources; the need to manufacture and distribute them and ensure their quality control; the need to sell their products in many geographical markets, as the home market is most probably not big enough to make the development financially viable; the need to build a brand in order to add validity to their name and products; and the need to look for external partners to achieve the previous four objectives. Thus, the capabilities that have been researched are to a large degree applicable and the learnings are useful for a larger population of such firms.

The findings are also applicable to the wider group of technology-based SMEs, dealing with physical products. In most of the discussions, the international dimension adds more complexity and pressure on a born global, but the principles and mechanisms of the discussed capabilities remain the same for the wider group of technology-based SMEs. The strategy and mechanisms for building a brand with nearly no marketing communication budget is viable for all NTBFs, irrespective of their geographical reach. The alliance management principles discussed in the second article would be applicable to all technology-based SMEs, except that international collaboration adds several additional dimensions to the already high complexity. The principles of R&D management in the smaller firm are also very relevant to any technology-based SME. Finally, many of the mechanisms of the managerial capability are relevant for all SMEs in general, as all of them require professional, but also dynamic and flexible strategic and operational management.

It would be excellent if other researchers took interest in this research and attempted to replicate the findings through more case studies; or undertook to build on the findings to expand the discussion on each of the capabilities through other cases of born globals and other SMEs.

#### 8.4.5 Practical Value

Miles and Huberman (1994) have named this quality dimension 'Utilization/Application/Action orientation'. This aspect deals with the practical value of the findings: is the study useful or potentially useful to practitioners – managers and/or policy makers? Are the results made available to them? What are their reactions? This section brings me to the closing discussion in this dissertation.

One of the major objectives when I started writing this dissertation was to make sure that its findings would be interesting to read for managers; that some valuable findings that they could readily implement in managing their firms would have been uncovered. I believe this to be one of the imperatives of good management research.

I believe that this research has accomplished this objective. In each of the articles, the actual managerial strategies and practices that led to specific results in the organization have been discussed, and the 'best practices' in the specific functions or in the overall management principles have been defined. The winning strategies have been discussed as such, and compared to the not very successful ones. The best practices in processes, structures, rules and organizational skills have been conceptualized as elements of specific capabilities and have been laid out in discussion at the end of each article. The practical recommendations from the whole study are also discussed in sections 8.3.1-8.3.4 of the current chapter.

I do hope that managers of born globals will find the articles and the findings useful, as they describe the actual history, strategies and practices of one very successful technology-based venture, which is

globally regarded as one of the absolute leaders in its field, and which has been built from scratch starting 12 years ago.

All in all, I do hope that this study has brought a grain of new knowledge, both theoretical and practical, into the ever changing, very complex and borderless sea of our everyday reality and our knowledge about it.

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## Appendix

*Questionnaire for the interview with Peter Sommer, CEO of Bang & Olufsen ICEpower a/s, for the article "Managerial capability of technology born globals"*

16 May 2011

I am looking to find out the different challenges that DBG faced during the different stages of the firm's development, how they were resolved, and by whom.

### **1<sup>st</sup> stage: Firm initiation:**

- How much and with what exactly did EM help with in the initiation stage?
- DBG's Board of Directors: what roles does it have? Whom does it consist of?
- Which EM's functions is DBG still using? And why would not EM relinquish the control this way, in Peter's opinion?

### **2<sup>nd</sup> stage: Growth and diversification, but also division inside the firm:**

- When did it begin?
- How was decision making carried out? CEO vs. the founder. Strategic planning? Before Peter and when he joined?
- The role of EM?
- Why, do you think, there was such strong division inside the firm?

### 2008: Financial crisis:

- Why was the founder asked to leave the firm in 2008?

### 3<sup>rd</sup> stage: Recession years:

- Were DBG's revenues and profits used to finance EM?
- Do you think that the original vision of "Becoming the Intel of Audio" has changed?

### 4<sup>th</sup> stage: After recession:

- Current challenges? How are they being solved?

### The future:

- Future plans?
- The foreseen challenges? Solutions?
- Which processes and structures inside the firm, Peter believes, will allow it to be a sustainable, long-term and profitable business?
- Which qualities and/or strategies will enable its growth?

*Questionnaire for an interview with Peter Sommer, CEO of Bang & Olufsen ICEpower a/s, for the article "The alliance capability of technology-based born globals"*

26 March 2010

I would like to enquire about the details of the three large strategic alliances that DBG has been involved in. We should probably take them one-by-one.

### **Defining scope of alliances**

- How clearly was the scope of the alliance defined for each of the three alliances? There are three aspects: strategic, economic and operational.
- Could you say that the scope of the alliance, as defined from DBG's side, was reached in that alliance? And for the partner?
- If, theoretically, DBG had the resources, could hire more people, could the firm develop the products on its own?

### **Assessing partners' skills**

- How were of the potential partners' skills assessed before entering into the alliance?

### **Technological learnings in the alliances**

- Do you think the partners might have learned particular skills from DBG and they might use them after?
- Was there an intention from DBG to learn something from these collaborations?

### **Structuring the alliances**

- How detailed were the contracts for the partnerships for each of the sides? How were they constructed?

- Can you tell an approximate average time that it took from an initial meeting to signing a collaboration contract?
- During the collaboration process, how was the communication structured: was there a particular “gatekeeper” – the person who decides which information goes out, and which doesn’t? Or were all the engineers communicating directly?
- About the technology aspects of the communication: how much of the technology was disclosed to the partner? Was it protected by patents?
- Did DBG intentionally try to protect its IP in each of the collaborations?

#### **Power dependency issues**

- Do you know if there were any issues related to power dependency in any of the alliances?

#### **Assessing results of alliances**

- Does the firm have any method for assessing results of a collaboration?
- Were original time plans adhered to in the projects?
- What is your reflection on how the projects could have been managed better?

#### **Sharing and preserving knowledge of alliance management in the firm**

- Is the experience from each collaboration shared in any way in the company? Are learnings from negative experiences shared in any way with other managers?
- Does the company have a dedicated alliance function or alliance specialist, someone who would help to design upcoming alliances with the learnings from previous alliances? This, of course, is applicable mostly for large companies, but there may be one person of the top

management that would, for example, participate in the setup of all the alliances?

- How is longevity of alliance knowledge preserved?

#### **Conflict resolution**

- How about conflict resolution? Was there guidance on how to regulate them in the alliance contracts or any other information source?

#### **Trust building**

- Did DBG put a special effort into building trustful relationships with its partners? And in which way?





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