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Small International Firms:

- The Emergence of International New Ventures

**Trondheim, Mars 2005**

Doctoral Thesis for the Degree of Philosophiae Doctor

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Key words: Marketing, Entrepreneurship, International Business

ISBN 82-471-7009-4 (electronic version)  
ISBN 82-471-7010-8 (printed version)

## Foreword

I would like to thank my supervisor, associate professor Øystein Moen. It was through Øystein that I got introduced to the INV research and Øystein generously supported my first research project on French INVs. Øystein is the most pragmatic man I've ever met and his "can do" attitude has spurred me whenever the task seemed insurmountable. Thanks a lot!

I would also like to thank the whole staff at NTNU's Entrepreneurship Center. They have been an inexhaustible source of good (and bad) suggestions and an excellent arena to discuss new ideas.

I also would like to show my gratitude to the institutions that has sponsored my work. First and foremost the Department of Industrial Economics and Technology Management at NTNU that granted my PhD scholarship. I also want to thank Professor Sigmund Waagø and the research program P2005 POP for sponsoring my stay at MIT and Harvard University in the initial stages of this project. Because of this generous support my research project got the best start imaginable and has beyond any doubt elevated the quality of this work.

A special thank to my parents that has taught me more than any other.

To Lena and Nora, above all...

I hope I've been able to give something back.

Sincerely,  
Arild

## Summary

Over the past ten years we have witnessed a massive increase in numbers of firms that have internationalized right after their establishment. This is an intriguing observation as we know that the occurrence of such firm are reported very rarely and that they traditionally have been considered almost as a theoretical impossibility. Today we see that such firms constitute a considerable share of the economy and that the traditional internationalization models render limited explanatory power to the new phenomenon.

The objective of this dissertation is to add to the existing knowledge on rapidly internationalizing new firms (here labeled International New Ventures (INVs) or Born Global firms) and to bring forward and discuss new theoretical developments in the field of International Entrepreneurship. I seek to do so by posing four specific research questions, each investigated in a dedicated academic study.

1. *What is the state-of-the-art in research on International New Ventures? (Paper 1)*
2. *What are the characteristics of International New Ventures compared to other types of small international firms? (Paper 2)*
3. *Do initial resources affect the organization's ability to survive? (Paper 3)*
4. *What is the role of ICT in small firm internationalization? (Paper 4)*

These four articles constitute the core of this dissertation.

In paper 1, which is a literature review of 41 articles from 20 core journals in the time period fraom 1992-2002, we conclude that INVs indeed represents a global trend that does not restrict itself to specific industries or regions. The numbers of studies that treat INV-related issues have increased significantly over the last decade, however, due to great heterogeneity in definitions and operationalizations, as well as a tendency to research based on judgmental samples, few generalizations seem viable. Even though there seem to be accordance among scholars on issues related to the major economic drivers behind the increased prevalence of INVs, the accordance does not travel to other fundamental properties of firm internationalization, such as the nature of the internationalization patterns of firms.

Paper 2 is a descriptive study of small international firms in Norway and their longitudinal performance. The paper presents a typology of small international firms where the distinct clusters are labeled i) *Born Globals*, ii) *Early Internationals*, iii) *Late Internationals*, and iv)

*Late Globals*, based on their extent and rapidity of internationalization. The typology proves very useful as firms in each cluster exhibits distinct characteristics in international motivation and behavior, which have a broad range of implications for both managers and policy makers. In terms of longitudinal performance the firms differ little on financial measures, however, Born Global type of firms score systematically higher on measures of perceived performance.

The third paper deals with the relationship between the resources available for the entrepreneurs at firm founding and the longitudinal performance of the firm, here measured in terms of survival. The findings support the main hypothesis that initial resources affect the organization's ability to survive in the longer run, especially in terms of entrepreneurial team and technology resources. The imperative conclusion from these findings is that there exists a general path dependency in the new venture resource development process and that also new firms, unfettered by bureaucracy and other sources of inertia, are bound by their history.

The final paper deals with the relationship between increasing numbers of small international firms and the advent of advanced information and communication technology (ICT) and seeks to unveil the role of ICT in the internationalization process of small firms. The study is based on a representative sample of small Norwegian exporters and compares firms with low, medium, and high levels of ICT adoption on issues relation to their international activities. The study concludes that, due to the positive effects of ICT adoption on international activities in the firm, there is likely a direct relationship between the advent of the Internet and the increased prevalence of small international firms. We found that ICT-intensive firms both exhibited a faster and more extensive internationalization than firms that adopt ICT to a lesser extent, and we also found a positive interrelationship between the firm's international vision, their competitive advantage and market strategy.

Based on a thorough discussion of the theoretical antecedents of this doctoral work, it is the conclusion of the thesis that further development of internationalization models should take a holistic view where both external factors and internal resources should be put on par with experiential market knowledge as explanatory variables in the internationalization process. It seems from the research on INVs that internationalization patterns of small firms vary to such a degree that new models should acknowledge firm internationalization to be firm specific and rather focus the attention on relationships between firm resources, strategies and external factors that create the unique internationalization of firms.

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## Introduction

This dissertation deals with the emergence of International New Ventures. International New Ventures constitutes a fairly new phenomenon in the international business and management literature and describes new firms that are international virtually from inception (Knight & Cavusgil, 1996; McDougall, Shane, & Oviatt, 1994; Oviatt & McDougall, 1994). Recent studies have showed that during the last two decades INVs have become a common organization form in the modern economy (Aspelund & Moen, 2001; Madsen, Rasmussen, & Servais, 2000; McAuley, 1999; OECD, 1998, 2000) and represents an increasing portion of new firms (Knight et al., 1996; Moen, 2002; Oviatt et al., 1994; Rennie, 1993).

These new international firms have been given different names such as Innate Exporters (Granitsky, 1989), Global Start-Ups (Jolly, Alahutha, & Jeannet, 1992), Born Globals (Knight et al., 1996; Madsen & Servais, 1997; Moen, 2002; Rennie, 1993), International New Ventures (McDougall et al., 1994; Oviatt et al., 1994), and Instant Internationals (McAuley, 1999; Preece, Miles, & Baetz, 1999). It seems from the literature that two names are predominantly used, namely Born Globals and International New Ventures. The latter is based on a broad definition incorporating several international activities such as exporting, sourcing, etc. (see definition below) and has emerged from scholars in the field of entrepreneurship. The first, Born Globals, arrives from scholars in the field of international marketing and stems from a conceptualization which is stronger ties to the international output of the firm (see paper 1 for an elaborate discussion on definitions and conceptualizations). In this dissertation the names International New Ventures (INVs) and Born Global firms are adopted and used interchangeably for semantic reasons. In terms of definition of the research object I have adopted Oviatt and McDougall's (1994, pp 49) definition which defines an International New Venture as *"a business organization that, from inception, seeks to derive significant advantages from the use of resources and the sale of outputs in multiple countries"*.

Even though the literature regards the emergence of INVs as a recent phenomenon there is reason to believe that INVs have existed for centuries, however in significantly lower numbers than today. Oviatt and McDougall (1994) mention several examples of INVs from previous centuries, for example the East India Company that was established in London in 1600. However, due to the focus on large companies in the international business literature,

INVs remained rare occurrences in the academic literature until the late 1980's. It was not until the publication of the seminal studies of Granitsky (1989), Rennie (1993), McDougall, Shane and Oviatt (1994), and the mentioned study of Oviatt and McDougall from 1994 that scholars really directed serious research efforts towards investigating the phenomenon of global start-up companies.

Apart from the fact that INVs represent an emerging type of firms and that their numbers are increasing considerably, there are also other features associated with the emergence of INVs that make them interesting research objects.

First and foremost, the emergence of INVs occurs in the intersection between two established and traditionally distinct research paths, namely international marketing and entrepreneurship. This crossing of research paths creates a great opportunity to extract knowledge and understanding from other strands of research in order to add to existing paradigms and even to build new theories and models<sup>1</sup>. The ongoing globalization of new businesses and the increased interest from scholars on related issues have created a new field of research labeled *International Entrepreneurship*, and is defined to be the “... *combination of innovative, proactive, and risk-seeking behavior that crosses national borders and is intended to create value in organizations* (McDougall & Oviatt, 2000, pp 903)”. This is the research field under which I will define my work and in a chapter below I will also present way of conceptualizing international marketing as an act of entrepreneurship.

Secondly, the emergence of INVs represents a challenge to the existing theories and models of firm internationalization (Bell, 1995; Knight et al., 1996; Madsen et al., 1997; McDougall et al., 1994; Moen & Servais, 2002; Oviatt et al., 1994). Traditional models have depicted the internationalization process of firms as an incremental process initiated only after domestic maturity; however the instant and extensive internationalization of INVs and their subsequent international behavior are frequently seen as a major challenge to these models.

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<sup>1</sup> There does not seem to be consistent use of the words theory, model and perspective in the internationalization literature. For the purpose of this dissertation, I've used the following guidelines: Theory denotes theoretical relationships that is empirically tested and recognized and remains so under very few restrictions. Examples of theories in his dissertation are Penrose' theory of the growth of the firm, transaction cost theory and resource-based theory. I've used the word model to describe theoretical contribution, which aim to apply general theories in order to explain a specific organizational phenomenon, such as the internationalization of the firm. Examples are stage models, the Uppsala model, or the innovation-related internationalization model. The expression perspective is used for theoretically approaches with weaker theoretical foundation in terms of tested and recognized relationships. The most prominent example from this dissertation is the holistic perspective.

Consequently, some scholars in the field have endeavored to liberate themselves from the traditional views of internationalization and build new models which incorporate the international behavior of new firms. The discussion of the appropriateness of the different internationalization theories, models and perspectives represents the underlying issue throughout this dissertation even though it might not be the focal research question in each paper. For this reason I've focused the discussion chapter around a synthesis of the development of behavioral internationalization models before and after the emergence of INVs and a discussion of the applicability of these on INVs based on the literature review and the empirical studies presented here.

A final, but significant motivation for INV research is the demand for theoretical frameworks and increased understanding of the processes involved in the formation and development of INVs. The criticism that has raised against the traditional internationalization models justifies the question of whether these models render applicable theoretical frameworks and general guidelines for managers and policymakers in the field. International marketing has long been a field of research where practice has often been more sophisticated than theory (Li & Cavusgil, 1995). On my account I would argue that the same is the case in the field of entrepreneurship. Research in the area is only justified by scholars' ability to deliver applicable understanding and knowledge on the processes at hand and this should also be a major motivator for future research projects in the field of international entrepreneurship. Following the recommendations of Li and Cavusgil, I've included two chapters in this dissertation dedicated to implications for practitioners and policy makers.

### ***Objectives and Research Questions***

The main objective with this research is to add on the existing knowledge on INVs and especially to highlight the theoretical foundation for new international firms. This work will not contribute with a new theory of firm internationalization; rather it will highlight a few central questions related to the emergence of INVs. Most attention is given to the question of the appropriateness of different traditional and new models of internationalization. However, as this relationship is a too great undertaking for a single study, I seek to advance the problem by posing four more specific research questions, each investigated in a dedicated academic study, and recapitulate the findings and discuss them in relation to the main question. It is the

hope of the author that this research will advance the field and be a building block to a new *Holistic*<sup>2</sup> model of internationalization.

The four specific research questions in this dissertation are as follows:

*What is the state-of-the-art in research on International New Ventures?*

After the research on International New Ventures gained momentum in the early 1990's a considerable amount of high quality work has been published in academic journals. The contributions are written from a broad range of theoretical perspectives and few attempts have been made to create a comprehensive review. This work seeks to make a contribution on this aspect by performing a comprehensive review of central academic papers on rapid internationalization of new firms in the most relevant academic journals within the fields of management, international marketing, and entrepreneurship (paper 1).

*What are the characteristics of International New Ventures compared to other types of small international firms?*

Traditionally, larger firms have dominated international business. However, recent years we have seen that small firms take an increasingly part of international trade. Research on small international firms has revealed that they exhibit great heterogeneity in international behavior as well as on organizational features, but no efforts have been made to create a typology of small international firms and investigate how they perform in the long run. Based on the two defining variables of International New Ventures, time from establishment to internationalization and total foreign sales share, I seek to create a meaningful typology of small international firms and compare the firms on aspects related to their international behavior and long-term performance (Paper 2).

*Do initial resources affect the organization's ability to survive?*

Our review on the literature on INVs revealed some interesting effects that deserved more attention. It appears that the earliest forming stages of a new international firm had a very strong impact on the organization's performance in the longer run (McDougall et al., 1994; Moen, 2002; Moen et al., 2002). McDougall et al. argues that this effect is mainly due to a

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<sup>2</sup> The term *Holistic* originates from the Greek word *holon* meaning *entity* (Wikipedia). Holistic refers to the idea that the properties of a system cannot be determined by the sum of its components alone, and that an explanation of a system's behavior must be derived from the perspective of the whole system.

general path dependency in the resource development of new firms. We wanted to explore this relationship on a sample of new technology-based firms and see whether the resources under the control of the entrepreneurs at firm founding had significant effects on a decisive long-term organizational outcome (Paper 3).

*What is the role of ICT in small firm internationalization?*

Another feature of the INV literature that attracted our attention was the unity of certain external factors that presumably triggered the emergence of INVs. One of these is recent advances in Information and Communication Technology (ICT). Even though several studies have mentioned the advent of the Internet and other new ICT applications as major reasons for the emergence of INVs, few studies have gone in-depth on the relationship between adoption of ICT and firm internationalization. Using a sample of 310 small Norwegian exporting firms, we sought to investigate the relationship (paper 4).

### ***International Marketing as an Act of Entrepreneurship***

For centuries there has been an ongoing discussion in the economics literature on the nature and drivers of economic development. At the turn to the 20th century neoclassical theory reigned the discussion, however the static and allocative nature of neoclassical theory makes it little suited to explain economic change as it does not treat key change aspects such as market dynamics, exploration and disequilibrium (Landström, 1999b; Peters, Elliot, & Cullenberg, 2002; Schumpeter, 1934; Schumpeter, 1947; Wickham, 2004). In Schumpeter's own words: *“Continuous changes, which may in time, by continual adaptation through innumerable small steps, make a great apartment store out of a small retail business, come under the “static” analysis. But “static” analysis is not only unable to predict the consequences of discontinuous changes in the traditional way of doing things; it can neither explain the occurrence of such productive revolutions nor the phenomena which accompany them. It can only investigate the new equilibrium position after the changes has occurred. It is just this occurrence of the “revolutionary” change that is our problem, ...”* (Schumpeter, 1934, pp 62-63).

Later, during the 20th century, two distinct schools of economic development emerged, both in which the entrepreneur had a central role. The first was introduced by the very same Joseph Alois Schumpeter, a young Austrian economist, in 1911. His original work was titled

*“Theorie der wirtschaftlichen Entwicklung”*, however the English version from 1934 is probably the most read and cited. Schumpeter’s answers to the problem of “revolutionary change” lies in his focus on the role of technological innovations and the entrepreneur. Schumpeter argues that the nature of economy development is not found in equilibrium, but in processes where the economy is brought out of equilibrium by entrepreneurs introducing a *“new combination of means of production”* (Schumpeter, 1934, pp 74). He argued the new combination of resources could take different forms like, *“the introduction of a new good, or a new quality of a good, the introduction of a new method of production, the opening of a new market, the conquest of a new source of supply, or the carrying out of a new organization of an industry (including the creation and breaking up of a monopoly)”* (Schumpeter, 1934, pp 66), however the defining trait is the ability to increase the overall productivity in the industry in which the new resource combination was introduced.

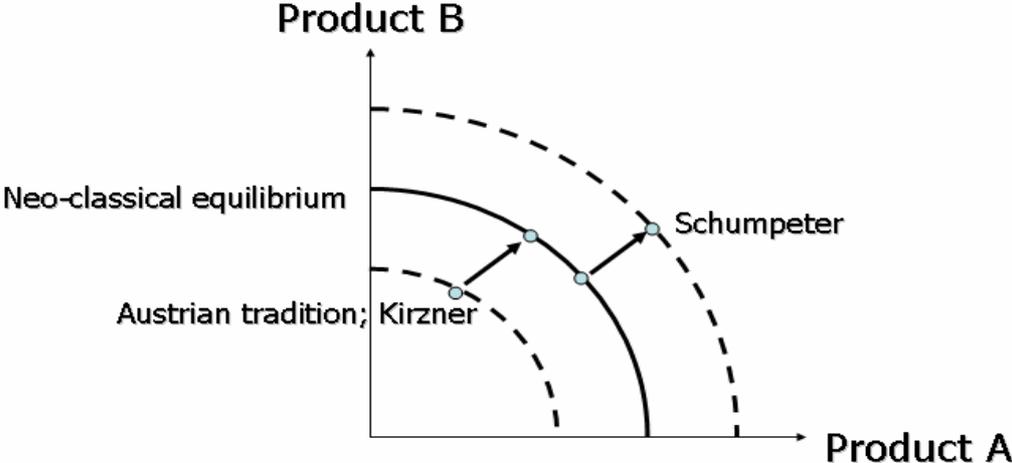
In the neoclassical view the only opportunity an economic actor had to earn excess rent was through temporary monopolies (Peters et al., 2002). By his new theory, Schumpeter also introduced an additional possibility of earning excess profit for economic actors, namely entrepreneurial profit (Schumpeter, 1934; Schumpeter, 1947). The actor that introduces the new technology into the market, the entrepreneur, can hence take out excess profit due to higher productivity than competitors, at least until other actors have adopted the innovation. Therefore, in more recent studies, Schumpeterian entrepreneurship has been synthesized as technology-driven entrepreneurship, where the introduction of a new technology in a market leads to a disruptive increase in productivity and opportunities for entry and profit for new actors (Cheah, 1990; Erikson, 2001).

Parallel to the development of the Schumpeterian school, another perspective on economic development rose from the early work of Carl Menger, Eugen von Böhm-Bawerk, Frederich von Hayek, and Ludwig von Mises (Landström, 1999a). This tradition has been labeled the Austrian tradition from the origin of the principal contributors (Cheah, 1990; Jacobson, 1992), and conceptualizes a market-oriented entrepreneurship model (Erikson, 2001).

The Austrian economists both relaxed the neoclassical assumptions about the “economic man” (Wickham, 2004) and perfect market information symmetry (Hayek, 1945) and argues that economic development occurs when an actor, the entrepreneur, are able to identify market imperfections and acts on the profit opportunity (Kirzner, 1997). A typical example of

an Austrian entrepreneur is one that due to his knowledge is able to spot inefficient use of resources in an industry and establishes an organization to arbitrage the market inefficiency. Hence an Austrian entrepreneur is able to earn excess rent from more efficient use of the resources under his/her control than the competitors.

To illustrate the differences between the two schools Landström (1999a) sketches the effects of Schumpeterian and Austrian Entrepreneurship in a Productivity Possibility Curve (PP-Curve). The Schumpeter entrepreneur shifts the PP-curve radically outwards by the introduction of new technology. The Austrian entrepreneur, on the other hand, is able to spot inefficiencies in the market and increases productivity by bringing an actor closer to the PP-curve.



**Figure 1: The Effects of Innovation in the Productivity Possibility Curve (Adopted from Landström (1999a))**

Even though there the two schools are conceptually different, there are no contradictions between the two. On the contrary, in practice both Schumpeterian and Austrian entrepreneurship function in an economy and there is even evidence that one type of entrepreneurship encourages the other (Cheah, 1990).

Applying these two schools of entrepreneurship in the case of international marketing, we clearly see that an internationalizing firm can play the role of an entrepreneurial agent in the market which it is introduced, both in terms of economic effects and firm profit.

In the case of heterogeneous national markets, i.e. different national markets exhibit PP-curves on different levels, an internationalizing technology-based firm will act as a Schumpeterian agent as it enters a new market where it shifts the PP-curve outwards. The assumption of heterogeneous markets is fair knowing that the availability of technology differs from country to country. For example, advanced production technology readily available for any actor in industrial countries in North America or Europe is not commonly available in developing countries in Africa. In this case the internationalizing technology-based firm can earn Schumpeterian entrepreneurial profits from the outwards shift on the PP-curve.

On the other hand, it is fair to assume that there are some similarities between national markets. If an Austrian entrepreneur is exploiting a market imperfection in one market and the market imperfection is also present in other markets, he/she can internationalize their operations and earn Austrian entrepreneurial profits also in other markets with similar imperfections.

#### *Two Well-Known Examples to Illustrate the Argument*

The rapid and extensive global expansion of some franchise organizations are examples of how Austrian innovations can be leveraged for organizations with global intent. In this setting, the well known fast-food chain McDonald's represents an illustrative example for the Austrian argument. Standardized products, a tightly managed, flat franchise organization, and a very successful branding strategy constitute the core of McDonald's business idea. The PP-curve is unaffected with McDonald's introduction in the food-serving market as no new technologies are introduced; still McDonald's has experienced an exceptional internationalization the past three decades. It seems most national markets suffers the same market imperfection Ray A. Kroc exploited in the US market when he established McDonald's in 1955, and that one organization is able exploit this imperfection in many, actually most, foreign markets.

Although it is often hard to tie Schumpeterian innovations to single firms, one example of Schumpeterian international entrepreneurship is found in David Landes' (1985) bestselling book on technological revolutions in the clock-making industry. In the last chapter of the book Landes tells the story of the introduction of the quartz technology in clock-making. The introduction of the new technology represented an innovation with significant consequences for incumbent clock manufacturers. The new technology allowed greater accuracy at significantly lower production costs, shifting the industry's PP - curve outwards. The result was that low-cost, predominantly Japanese, manufacturers came to control the clock-making industry globally within few years, sidelining the Swiss manufacturers that traditionally had dominated international markets.

As we have seen in this chapter, the internationalizing firm can play the role of an entrepreneurial agent either in the Schumpeterian or Austrian sense. Hence, an entrepreneurial view on international marketing is justified. However, it is beyond the scope of this dissertation to study in-depth the macro effects of internationalizing firms and I will proceed with a discussion of more firm behavioral character.

### ***Methodological Considerations***

In this section I will first make some general comments on methodological considerations of this dissertation as a whole, more specifically, considerations regarding the quantitative research method and the Norwegian context. Subsequently, I will discuss some central methodological issues on research design and data sources in each of the four papers. To avoid repeating arguments from elsewhere in the dissertation, I refer to the method and discussion chapter in each paper for a detailed presentation of the research design and a discussion on factors related to reliability and validity.

### **The Quantitative Nature**

With the exception of the literature review, the contributions in this dissertation are of quantitative nature. The author defends that choice of methods from the nature of the research questions. The primary objective of this work is to explain a new phenomenon by established concepts and variables. Both the internationalization and entrepreneurship research streams are of a certain level of maturity and all the concepts treated here are known from either qualitative or quantitative research in one of these research fields. Hence, less effort will be

focused on exploring new concepts and variables and more efforts focused on investigations of descriptive and causal nature. Under these conditions quantitative investigations holds an advantage to qualitative methods since generalizability can be argued from representability of the population (Hair, Anderson, Tatham, & Black, 1998).

As often is the case with quantitative studies, the some theoretical arguments are hypothesized and tested by the means of statistical methods. This is a research method that has a long and strong position in management research, however it is also a method are associated with problems that should not be taken lightly by any quantitative researcher.

The primary concern is the role which statistics assumes in a quantitative research project. Abelson (1995) discusses this issue in a book chapter that highlights the obvious misleading statistical claims can induce when the statistics are disengaged from the context from which they occur. It is obviously a Utopian idea to believe that any quantitative study can control for all spurious, mediating, and moderating effects in social sciences. Hence, statistical analysis can never be the ultimate test of the nature of our environment and existence, only an argument for a broader theory or explanation of the dynamics of our social reality.

This general critique of quantitative research is met by the standard form in which the research findings are presented in this dissertation, namely the form of the academic paper. In this form of research presentation a formal, often preferred, theoretical perspective is presented initially and from this perspective some hypothesized relations emerge about the questions at hand. Further, these hypotheses are tested by the best statistical means available for the researcher and the hypotheses are rejected or supported. It is then the following discussion that relates the statistical conclusions to different candidate theoretical explanations that represents the true value of the work. In Abelson's words: "*It is the task of data analysis and statistical inference to help guide the choice among the candidate explanations. The chosen explanation becomes a claim.*" (Abelson, 1995, pp 5). Due to the imperfect nature of all research in social sciences, quantitative research efforts can never become more that that. At least, this represents the ideal research presentation, which has guided the author underway. It must be the job of others to evaluate the extent of which the requirements are met.

## **The Norwegian Context**

The empirical studies incorporated in this dissertation are, with exceptions of 20% Swedish cases in paper 3, based on empirical data from the Norwegian context. It is hard to say to which extent this restriction weakens the generalizability of the findings. However, foreign readers should bear one issue in mind, namely that the density of INVs tend to be higher in small, developed and open economies such as in Scandinavia (Christensen, 1991). This is also the conclusion in two of the studies in this dissertation (paper 1 and 2). The latter study also concludes that the motivation for international expansion for INVs is often tied to the size of the domestic market. Hence, the generalizability of the findings in this work must be seen in the light of this important limitation. For specific considerations of limitations related to each study, I refer to the methods and discussion chapters in each paper.

## **Paper 1: The Literature Review**

The idea of making a literature review on INVs were conceived in Trondheim in the fall 2002 when Professor Tage Koed Madsen was formally appointed adjunct Professor at NTNU's Department of Industrial Economics and Technology Management (IØT). The research collaboration between IØT and the Department of Marketing (DM) at the University of Southern Denmark goes years back, but now that we had the opportunity to meet on a regular basis, we decided to take the cooperation to a new level and seek to combine our research into co-written academic papers. The research on INV forms the common platform for the research at both IØT and DM so a literature review appeared to be a good point of departure. The fact that the literature clearly lacked a comprehensive review of the literature on INVs served as an extra motivation.

The research design and paper outline was inspired by previous literature reviews in the field of internationalization (Chetty & Hamilton, 1993; Coviello & McAuley, 1999; Madsen, 1987; Zou & Stan, 1998). However, on one feature we think that our review stand out in comparison to previous reviews, namely on its interpretative character. Reviews often fall into one of two distinct types of reviews, explicitly the meta-analysis approach or the report approach. The first uses statistical methods to conclude on a specific research question based on a recapitulation of previous empirical studies (see e.g. Chetty et al., 1993). The second merely reports characteristics and conclusions of the various studies using vote counting (see e.g. Madsen, 1987; Aaby & Slater, 1989). We have endeavored to follow a narrative approach as

suggested by Zou and Stan (1998). Our study does not incorporate information structure a report approach would have, however the most important information on research questions and treats of each reviewed study are duly incorporated. In terms of the conclusions, we have only concluded on issues where the reviewed studies have been unison. For the rest, we have tried to tie the conclusions to the ongoing debate on the question at hand.

## **Paper 2: The Typology**

This paper emerged from the need to give a description of INVs to other types of small international firms based on key features of their existence. The initial motivations was to create a typology of small international firms based on the defining features of INV and simultaneously investigate idiosyncratic features of INV and their long-term performance compared to their counterparts.

This study is based on two data sources. The primary source is a survey conducted by Associate Professor Øystein Moen in 1997. Back then, 1500 Norwegian firms were randomly selected from the Compass Europe database, which contains most of Norwegian enterprises. Three selection criteria were used, namely that the firm should be small (less than 250 employees), manufacturing, and report international sales. The firms were sent a 6-page questionnaire on issues related to their international operations, and the respondents were primarily managing directors or export managers. The survey returned 335 usable responses (23, 2 percent) and must be regarded as a representable sample of small, international manufacturers in Norway.

Five years later, the author performed a follow-up on the respondents. By cross-examining the existing database with the Brønnøysund Register Center and the Dunn and Bradstreet Business Database<sup>3</sup> I was able to assess the firms' financial performance from 1997 to 2000 and whether and cases had been terminated in the time period. As our initial identification of the firms came from the Compass Europe Database, some cases (47) were deleted from the sample due to non-exclusive identification in any of the three databases. An additional 5 cases were deleted because they were merely Norwegian sales branches of international enterprises.

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<sup>3</sup> The author is grateful to Dunn and Bradstreet and Associate Professor Sjur Westgaard at NTNU for granting access to the data.

All in all, 283 cases were included for the analysis and the discharge of 52 cases (15, 5 percent) is regarded acceptable for a follow-up study.

The study follows systematically the cluster analysis approach suggested by Hair, Anderson, Tatham and Black (1998) and departs from the two defining features of International New Ventures that were found in the literature review, namely the high level of international output and the short time span from firm establishment to first international sales, and creates a natural typology of four types of small international firms based on the two variables.

The major methodological consideration of this study was the choice of clustering procedure. There are several ways, both statistical and conceptual, of clustering a sample and the decisive factor is to select a clustering procedure that is suitable for the research question. In this case, as the defining variables were given from the literature, I chose a statistical procedure called the K-means cluster method.

The major strength of this procedure is that it returns a set of clusters that are as compact (i.e. the distances from each observation to their assigned cluster center are minimized) and well-separated (i.e. distances between cluster centers are maximized) as possible. Hence, the procedure returned a set of clusters that maximized the differences on the defining variables between the clusters, and at the same time minimized the heterogeneity within each cluster.

The major weaknesses of the K-means cluster method are that it does not incorporate a procedure to select the natural numbers of clusters in the sample and neither a test to establish the level of distinctness of the clusters. I considered these weaknesses to be of less importance for this study as the numbers of clusters (four) were naturally given from the number of defining variables (two). I also tested the statistical distinctness of the clusters on the defining variables to control for the latter. As the results turned out significant at the  $P < 0.001$  level, I regarded the method as adequate for the purposes of this study.

### **Paper 3: On Initial Resources**

This study was conceived during Professor Sørensen and Professor Fernandez quantitative methodology class at MIT Sloan School of Management. The work of Professors Sørensen and Fernandez are examples of the advanced research methods that has been developed at

Stanford University's Department of Sociology, and I saw this as an fine opportunity to transfer some of these methods over to the field of entrepreneurship.

The theoretical motivation for the study is found in McDougall et al (1994), Moen (2002) and Moen and Servais' (2002) studies of International New Ventures that showed a strong dependency of strategic marketing decisions made at the earliest phases of the establishment of an INV on the long-term international performance of the firm. As I reviewed organization and strategy research literature on the issue, it became clear that this phenomenon was of a more general nature than only applying to INVs. It also became clear that initial resources constituted the core independent variables as initial strategic marketing decisions are made on that basis of the resources that the entrepreneur controls, or are likely to achieve control over, at the time when the decision is made (Dollinger, 1999).

In order to test some hypotheses on the relationship between initial resources and performance, cooperation was established with Professor Waagø and the Center of Entrepreneurship and Innovation at NTNU. The center holds an archive with longitudinal data over all new ventures that have had formal cooperation with the center over the last decade, data that forms a perfect opportunity to investigate the present research question using a method from sociology, namely event-history models. Due to methodological requirements, two very competent Master of Science candidates at IØT were included in the research team, current Research Fellow at IØT, Terje Berg-Utby, and current SINTEF researcher, Rune Skjevdal. They have done a remarkable contribution to elevate the quality of the study and the workload has been divided evenly between the three authors of the paper. The authors are grateful for the rewarding and long-lasting cooperation with Professor Waagø and the Entrepreneurship Center at NTNU for providing access to the data and valuable feedback under the process.

The data consists of an archive with business plans written in the initial stages of the firms' establishments. In addition, the data consists of three follow-up surveys from 1999, 2001 and 2002. Variables related to the initial resources of the firm (such as team and technology resources) were coded from information in the business plans and the entrepreneurs' CVs, while information on performance (survival) was coded from the follow-up surveys. As the authors of this paper had no influence over the design of the data sources, several precautions were made to secure the validity of the study. To achieve strong validity of the variables is

regarded as the greatest methodological challenges of this study, and our efforts to provide this is described in detail in the paper.

While achieving validity constituted the greatest methodological challenge of the study, the statistical method constitutes the greatest methodological contribution. Our data contained two features that describe two general methodological challenges related to time-series analysis, namely that the cases are recorded over different time periods and that the event of interest might not occur in the time period of which the study is performed. The first problem is often solved by using time to the event occurs as the dependent variable. This solution is obviously not optimal as all cases where the event does not occur must be omitted from the analysis and hence created an obvious bias in the data (Sørensen, 1977; Tuma & Hannan, 1978). The second problem is often solved by using the dichotomy of whether the event occurs or not as the dependent variable. This is neither a good solution as the time aspect disappears from the analysis; one is unable to make a distinction of the probability of the occurrence of the event of either side of the defined study period.

Event-history models accounts for both problems described above by incorporating both the variable of whether the event occurs or not, and time to the occurrence of the event in the dependent variable, the hazard rate. The hazard rate is defined as the probability that an event occurs within a particular time interval to a particular firm at risk during that time interval. This enables the researcher to investigate the influence of the independent variables on the complete sample of cases (both the cases where the event occurs and where they do not) and simultaneously investigate the time dependence of the influence. This is a sophisticated approach that holds a considerable potential for entrepreneurship research, especially now that the trend in the field is that more emphasis is put on strategic issue post establishment, such as internationalization. As the method is fairly new to the field of entrepreneurship, a considerable part of the paper is dedicated to a presentation of the statistical method. Hence, for a more thorough introduction to event history models I refer to paper 3.

#### **Paper 4: On the Role of ICT**

This paper was also conceived while the author took mandatory PhD courses at MIT Sloan School of Management. The general aim of the paper is to investigate the relationship between two emerging phenomena in modern economy, namely the significant advances in

Information and Communication Technology (ICT) and the increasing number of small international firms, which was one of the debated issues in Professor Erik Brynjolfson's class on economic perspectives of the IT revolution.

In terms of its methodological approach this paper is fairly straight forward. We seek to answer the research question by clustering firms with different levels of ICT adoption and compare them on features generally associated with their international behavior. Hence, this study, like paper 2, follows the general cluster analysis approach recommended by Hair et al. (Hair et al., 1998). As opposed to the study in paper 2, which followed a statistical clustering procedure, this study employs a conceptual clustering procedure in which the clusters are created from three questions related to the use of ICT. Hence, three clusters emerged where the firms in the first cluster has not adopted ICT, the second had adopted some ICT, but does not constitute an important part of their international activities, and finally the third cluster has fully adopted ICT and ICT represent an integrated part of the firm's international operations.

The data in this study is the same as described in paper 2, only prior to the follow-up study so that no longitudinal performance data is incorporated in this study. Out of the total sample of 325 cases, 25 were deleted due to incomplete information on the key variable in this study, namely the adoption of ICT, which remained 210 for the analysis. Like paper 2, the comparison analyses were performed using both ANOVA and Bonferroni tests to investigate differences both in variance and mean values.

### **Summary of Studies and Methods in This Dissertation**

This dissertation contains studies, which, with the exception of the literature review, are of a quantitative nature. For the literature review we chose a narrative approach due to the purpose of the study, namely that it should serve not only as a recapitulation of the conceptualizations and empirical findings on INVs, but also as an introduction to INV research.

The three quantitative studies employ mainly two types of methods, two cluster analyses and an event-history model. In the event-history paper the method itself represents a contribution to the research field. Even though both entrepreneurship and international business are focused around events such as birth and death of organizations, internationalization and the time-lag between these, only very few studies have employed event-history models. The study

presented here shows that event-history models can be a useful tool in investigating a broad range of central research issues in international entrepreneurship as well as other related fields of research.

The cluster analyses are different in the way the clusters are created. In the ICT paper the clusters are simply created from whether the firm falls into low, medium, or high values on a single composite scale, while the typology- performance paper uses a more sophisticated method where the clusters are naturally created from two dimensions by a K-means algorithm. Common for both is that they compare the clusters by an ANOVA procedure with Bonferroni-tests.

**Table 1: Summary of studies and methods in this dissertation**

<b>Title</b>	<b>Data</b>	<b>Method</b>	<b>Status</b>
International New Ventures: A Review of Conceptualizations and Findings	Published literature. 41 articles in 20 core journals. Spanning the years 1992-2002.	Narrative literature review.	Unpublished Paper
Small International Firms: - Typology, Performance and Implications	Survey data (1997) with follow-up from secondary sources. 283 cases. Representative sample of small Norwegian exporters	Cluster analysis. K-means method. Comparison analysis.	Accepted for publication in Management International Review
Initial Resources Influence on New Venture Survival: A Longitudinal Study of New Technology-Based Firms	Longitudinal archive data. 80 cases. Sample of independent Norwegian and Swedish new Technology-Based Firms	Event-History model.	Accepted for Publication in Technovation
Internationalization of New High-Tech Firms: The Role of Information Technology	Survey data (1997). 310 cases. Representative sample of small Norwegian exporters.	Cluster analysis. Clusters created from “low-medium-high” on composite scale. Comparison analysis.	Published in Journal of EuroMarketing (2004), Vol 13, numbers 2/3, pp 85-105

## **Presentation of Main Findings**

In this section I will give a short presentation of the main findings from this dissertation. In order for a structured presentation I'll present the main findings study by study.

## **Paper 1: The Literature Review**

*Research Question: What is the state-of-the-art in research on International New Ventures?*

After reviewing 41 articles on INVs in 20 journals from 1992 to 2002 we concluded that the prevalence of INVs indeed has increased globally the past decade and now constitutes a significant segment of the global economy. Findings from this review show that the INV phenomenon is a general global trend, which does not restrict itself to specific industries or regions, even though occurrence might be higher in technology intensive sectors and small, open economies.

The number of studies that focus on INVs has also increased with the prevalence of INVs, but as there exists great heterogeneity in definitions and operationalizations of the concept as well as tendency to research based on judgmental samples, few generalizations seem viable from the considerable amount of research performed.

On some issues there seems to be wide accord among researchers in the field. One is the major economic drivers for the increased prevalence of INVs. Global trends over the past two decades have significantly lowered the entry barriers into new markets and also increased the supply, and hence lowered the price, of resources necessary for firm internationalization (an example of the latter is the increased availability of managerial talent with international experience).

Another issue where there seems to be accord among scholars is on the path dependency of the internationalization process of INVs. The time period around the establishment of the new firm seems decisive for the long-term international development of the venture. A firm that already at early stages establishes international ties, resources, and routines appears far more likely to experience a long-term success on international markets.

The accordance, however, does not travel to other issues. For example, an issue that has been widely discussed in the literature is the nature of the international development pattern of INVs. Some scholars argue that there are no incremental patterns in INVs' internationalization and that internationalization is a precondition from the outset. Others argue that the new phenomenon we see is merely an accelerated version of the stage-wise internationalization as we know it, or even follows a cyclic pattern where international expansion comes in repeated intensive periods where new international ties are made. What at least seems to be clear is that the heterogeneity of firm internationalization pattern is larger than traditional models account for. Hence, new perspectives or at least significant extensions of current theories and models are needed.

### *Conclusions*

In conclusion, there seems to be plenty of room for improvements and advances in the field by developing rigid operationizations of the concept and creating typologies of different types of new international firms. New research efforts should be based on larger survey data to secure generalizability of results and to test the proposed relationships in a broader setting. In addition, the review concludes that research in the field should be more oriented towards theoretical advances rather than descriptive purposes, which predominantly has been the case so far.

## **Paper 2: The Typology**

*Research Question: What are the characteristics of International New Ventures compared to other types of small international firms?*

Based on a representative sample of small Norwegian exporters, this paper seeks to make a contribution by addressing two issues. First, it seeks to establish a typology of small international firms based on the level and degree of internationalization and compare then on issues related to their international behavior. Second, it seeks to assess whether a rapid and extensive internationalization is generally associated with performance gains.

To establish the typology there were performed a clustering procedure that returned four distinct clusters of small international firms, labeled *Born Globals*, *Early Internationals*, *Late*

*Internationals*, and *Late Globals*. The typology proves very useful as firms in each cluster exhibit great variance in traits, international motivation and behavior, which have a broad range of implications for both managers and policy makers. From the clustering part of the analysis especially two findings are noteworthy. First, only 4 percent of the firms in the sample ended up in our fourth cluster, namely the *Late Globals*. This is a clear indication that small firms that start the internationalization process late, are little likely to turn into truly global actors. It is likely that this effect emerges from the path dependency of general resource development processes and specifically the internationalization process of the firm. Also other studies have pointed to the difficult innovation process of turning a predominantly domestic organization into an international business. Secondly, it turns out that early internationalization represents the norm and not the exception among small international firms in Norway. Of the total sample, 78 percent falls into either the *Born Global* or the *Early International* cluster.

On the performance issue the study renders little support to the notion of *Born Global* firms as extremely fast-growing companies in general. Rather, findings suggest that a *Born Global* strategy has few positive effects in terms of objective financial measures such as growth and return on assets. Actually, in terms of objective financial measures there are very few differences between the clusters. However, it should be noted that still the most rapidly growing companies tended to end up in the *Born Global* category. When we investigated the high-growth companies in the total sample (firms with more than 15% average annual growth in turnover), 10 out of 12 firms came from the *Born Global* cluster. In conclusion, in the general case there does not seem to be a relationship between fast and extensive internationalization, however there appears to be a tendency that very fast-growing companies end up in the *Born Global* category. In terms of subjective measures of performance, there seems to be a positive relationship between early and extensive internationalization and performance.

### *Conclusions*

The study concludes that small international firms naturally fall into four types of firms that exhibit significant differences in traits, international motivation and behavior. The different types of firms differ little on financial performance, but differ significantly on perceived performance measures. The conclusions on what differentiates the types of small international firms are best offered by a presentation of each type.

The *Born Global* firms, defined by their rapid and extensive internationalization, are often forced into internationalization due to an insufficient domestic market and apparent opportunities for growth and profit on foreign markets. *Born Global* firms operate on many markets and even though they naturally tend to gravitate at least around their own continent, psychic distant markets often constitute their most important. *Born Global* firms have a very strong competitive profile with distinct market and technology advantage to their international competitors. They seek to leverage these advantages in niche markets, differentiation themselves from other competitors and through outperforming competing products with higher quality and better performance. Managers in *Born Global* firms perceive their growth prospects and international performance to be good, however, on objective measures only *Turn Over Growth* appears above average for small international firms. The latter is mainly due to an overrepresentation of very rapidly growing companies in this category.

*Early International* firms, here defined by their early but limited internationalization, seek internationalization to reduce the dependency of domestic markets. The process is often initiated by foreign initiatives, but will in most cases limit itself to few and proximate near markets. *Early International* firms often have a strong technology advantage and seek to leverage that advantage through niche market and differentiation strategies. Managers perceive their prospects for growth high, but their international performance as low. One can possibly categorize these firms as “failed” *Born Globals*, likely due to lack of competitive strength on marketing capabilities.

The final group, the *Late Internationals*, here defined by their late and limited internationalization, constitutes by older and slightly larger firms. Internationalization is triggered by domestic downturns, and the firms seek a more solid market platform by expanding business into new markets. Trade is restricted to few markets, but they are often fairly distant, at least compared to *Early International* firms. *Late International* firms seek to leverage a market advantage, which they have developed through years of operations. The major competitive strategy is through high-quality products. These firms have generally low growth prospects and low perceived international performance.

The paper also forwards several implications for scholars, practitioners and policy makers in the field of small firm internationalization based on the findings in the analysis. I refer to the paper for an elaborate discussion on these issues.

### **Paper 3: On Initial Resources**

*Research Question: Do initial resources affect the organization's ability to survive?*

The findings in this study support the main hypothesis that resources under control of the entrepreneurs at start-up influence the ultimate performance of the new firm. From our sample, the analysis showed that both entrepreneurial team and technology resources under the control of the entrepreneurs at firm founding had a significant positive effect on the probability of firm survival. From a theoretical standpoint, the study argues that the results emerge from the general resource demanding character of the entrepreneurial process, but also due to path dependency in the resource development process of the firm.

More specifically, two features of the initial resource profile of the new firm appear to have influence on the ability to survive, namely the heterogeneity of the entrepreneurial team and the radicalness of the technology they intend to take to the market. Regarding the first, the stepwise regression method revealed an interesting relationship between entrepreneurial teams and performance. Not controlling for heterogeneity it appears that team size significantly reduces the probability of firm failure. However, then team heterogeneity enters the equation the team size coefficient sign is reversed and team heterogeneity becomes the positive factor. We interpret this result as team size is only positive if large teams mean great heterogeneity. Hence, in order to optimize for firm survival teams should be *resource dense*, i.e. every new member should introduce a new talent or skill into the team. *Resource dense* teams are able to draw from a broader pool of talents and skill, increase the level of task related conflict and at the same time reduce the probability of raising deteriorating affective conflicts.

The second finding on technology radicalness is less intriguing in terms of its newness. However the finding underpins an important feature of new technology entrepreneurship and the resource-based view, namely that there is great value in uniqueness and also that new

ventures often require a certain innovation height in order for the new technology to be successfully commercialized within the boundaries of a new firm.

### *Conclusions*

The study supports the hypothesis that initial resources such as team resources and technology treats are predictors of new firm survival. The findings support the notion of general path dependency the new venture resource development process. It shows that also new firms, unregulated by bureaucracy and other factors of inertia, are bound by their history. It also emphasizes the importance of management of internal resources in the new venture creation process. These two issues embody a key lesson for technology investors and managers in NTBFs and show that early internal management decisions must be taken with a long term perspective.

## **Paper 4: On the Role of ICT**

*Research Question: What is the role of ICT in small firm internationalization?*

The final paper in this dissertation deal with an external factor that presumably has accelerated the emergence of INVs, namely the adoption of advanced in information and communication technology (ICT) by small firms. The facilitating role of ICT in firm internationalization has been put forward in multiple studies, but none has gone in-depth on the issue. Based on a representable sample (310 cases) of small and medium-sized Norwegian exporters this study attempts to explore the role of ICT in small firm internationalization.

We clustered the sample into three clusters with firms with no ICT use, some ICT use, and extensive ICT use. Through comparison analysis between the three clusters three simple relationships were found. First, ICT intensive small firms exhibit a faster and more extensive internationalization (both in terms of export sales share and number of foreign markets) than firms that make less use of ICT. This is a finding that indicates that ICT can be a powerful tool, not only for exploitation purposes (streamlining ongoing international operations) as it has been mentioned most often in the literature, but also for exploratory purposes such as search and evaluation of new international business opportunities.

Secondly, it is most often technology oriented firms (firms that reported technology to be their primary competitive force) that make use of ICT in their international activities. This might be because firms that already possess high levels of technological competencies are early adopters of advanced ICT solutions, but it can also partly be contributed to technology oriented firms ability to integrate new technology into their business activities.

Third, ICT intensive firms scores significantly higher on factors related to managers' international orientation (international vision and international customer orientation). It is, however, hard to establish a theoretical argument of the directionality of this relationship. It could be that managers in ICT intensive firms become more internationally oriented due to the exploratory features of ICT as mentioned above. It could also be that internationally oriented managers put advanced ICT solutions in place in order to effectively succeed with their international ambitions.

Finally, we investigated the interrelationship between the variables in a structural equation model. We found ICT to be positively related to all the three other factors; *technology advantage*, *international vision* and *niche strategy*. Moreover, we found all the latter variables to be positively related to each other. As international vision from inception, technologically advanced products, and niche focus strategies are key features of INVs it seems safe to conclude that new major advances in ICT have contributed to the rapid and broad emergence INVs.

### *Conclusions*

The study concludes that there indeed is a relationship between the increased occurrence of small international firms and the advent of advanced information and communication technology. The main argument for this relationship is the more rapid and extensive internationalization of firms that have adopted ICT and integrated them into their business functions. However, the study also unveils an underlying process where the positive interrelationship between the use of ICT, competitive advantage of the firm, strategic focus and international vision of management creates a favorable environment for small firm internationalization.

## ***Discussion and Implications***

In this section I will discuss the contributions of the dissertation in relation to the most prominent discussion among scholars, practitioners and policy makers in the field of INV research, namely the nature of the internationalization process of new firms. The discussion is structured so that I first present three dominating perspectives of firm internationalization in terms of their theoretical roots, distinguishing features and impact on INV research. Subsequently, I'll discuss the findings in the dissertation in relation to these perspectives. This section also includes suggestions for further research based on the limitations of this work. Finally, I discuss issues related to practitioners and policy makers.

## **Contributions and Theoretical Implications**

As mentioned earlier in this chapter, this document does not aim to falsify any earlier theoretical platform, nor contribute with a new theory of the internationalization of the firm. However, discussion of the appropriateness of existing models and the search for new theoretical frameworks that better suit the international behavior of INVs is an underlying issue throughout this dissertation. As the specific theoretical contributions are presented in each paper I will here rather discuss the overarching contributions and implications to the general theoretical aspects of firm internationalization. In order to do so I will in the following give a short historical presentation of the theories and models in question<sup>4</sup>.

### *The Stage Models*

The reigning paradigm in behavioral models of firm internationalization the past four decades has been the so-called stage models, or models that depict the internationalization process as a slow, incremental process where the firms spread like rings in the water (see e.g. Madsen et al., 1997). Andersen (1993) labeled the two dominating stage models the *Uppsala Internationalization* model and the *Innovation-Related Internationalization* model, which also will be adopted here. Even though the two models depict the internationalization process very similar, the theoretical rationale is rather different and therefore the models are also presented separately here.

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<sup>4</sup> Parts of this theoretical presentation, especially on issues related to the innovation-related internationalization model, are inspired by a paper in progress co-authored with Professor Tage Koed Madsen at the University of Southern Denmark.

### *The Uppsala Internationalization Model*

In terms of behavioral internationalization models, the *Uppsala Internationalization* model, originated from the Swedish business school by the same name, must be regarded as the most prominent.

### *Theoretical Roots*

The *Uppsala Internationalization* model departs from Penrose's (1959) theory of the growth of the firm and Cyert and March' (1963) behavioral theory of the firm. The model asserts that any actor has different access to information, and hence, international expansion is restricted by the organization's pool of experiential knowledge (Eriksson, Johanson, Majkgård, & Sharma, 1997). In Penrose' words: "... if a firm deliberately or inadvertently expands its organization more rapidly than the individuals in the expanding organization can obtain the experience with each other and with the firm that is necessary for the effective operation of the group, the efficiency of the firm will suffer, ..." (Penrose, 1959, pp 47). That is, the firm can only expand its business to a certain rate due to constraints in supply of entrepreneurial and managerial services in the management team. Unless the managerial team is indefinitely dynamic in its composition, which is regarded as an organizational impossibility, the firm can only expand its business to a certain level when all managerial talent is tied up in administration and no managerial resources are available for entrepreneurial activities.

Further expansion, beyond the capacity of the productive resources already embedded in the organization, will be restricted to the organization's ability to accumulate experiential knowledge from its business activities. Cohen and Levinthal (1990) name this quality absorptive capacity and define it as the ability to recognize the value of external information, assimilate it in the organization and apply it in existing or new commercial activities.

Applied in the internationalization process, the *Uppsala* scholars argue that international firm expansion is limited by the experiential market knowledge embedded in the organization. Furthermore, an organization can not expand faster than it can absorb experiential knowledge from international activities. Hence, the core of the *Uppsala* model is that the internationalization process is dependent on the experiential knowledge embedded in the organization and the absorptive capacity of the firm, which implies an incremental internationalization manner (Eriksson et al., 1997).

### *Distinguishing Features of the Uppsala Internationalization Model*

From the theoretical roots put forward above, the *Uppsala* model has developed four distinguishable features. The first is the underlying driving force of the internationalization process, what has come to be known as the *experiential learning – commitment* interplay (Johanson & Vahlne, 2003). This interplay was first presented in Johanson and Vahlne's article in the *Journal International Business Studies* in 1977 and further developed by the same authors in a more recent contribution (Johanson & Vahlne) in the *International Business Review*. The *experiential learning – commitment* interplay explains how the firm gradually increases its foreign activities by developing their knowledge and operations in foreign markets and subsequently increasing their resource commitment to international markets.

The other three distinguishing features of the model are more or less direct effects of the *experiential learning – commitment* interplay. Two, the *establishment chain* and the *foreign development through increasing psychic distance*, were first presented in the seminal paper by Johanson and Wiedersheim-Paul in the *Journal of Management Studies* from 1975. The concept of the *establishment chain*, describes how the firm develops its involvement in each specific foreign market through first no regular activities, through independent representatives and sales subsidiaries, to ultimately foreign production facilities as the firm increases its resource commitment. The concept of *foreign development through increasing psychic distance*, describes how the firm gradually spreads its foreign activities to countries with increasing psychic distance as the firm gradually increase its base of foreign knowledge.

The fourth and final feature that describes the model is the path dependence of the internationalization process. Since the subsequent foreign development is to such an extent grounded in the existing foreign engagement, internationalization is a path and history dependent process according to the *Uppsala* model (Eriksson, Majkgård, & Sharma, 2000).

### *Recent Studies that Employ the Uppsala Model on INVs*

Recently there has been published some papers that treat INV issues by the means of the *Uppsala* model. One example is Sharma and Blomstermo's (2003) attempt to explain rapid internationalization by new firms through the original *Uppsala* perspective. They assert that rapid and instant internationalization, as characterized by INVs, is explained by the experiential knowledge already embedded in the entrepreneurial team at firm founding

(Sharma et al., 2003). That is, if former relevant experiential knowledge is present in the entrepreneurial team at firm founding, conditions are sufficient to launch an INV.

However, more noteworthy is perhaps the contribution that the originators of the *Uppsala* model, namely Jan Johanson and Jan-Erik Vahlne, make in the first volume of the *Journal of International Entrepreneurship*, a dedicated journal for INV-related issues. These two authors also recognize the shortcomings of the stage models and seek to advance theory by integrating insight from the network tradition (Johanson et al., 2003). This contribution distinguishes itself from the traditional stage models by underpinning factors that might contribute to an accelerated internationalization, and implicitly relaxing the most stringent features of the stage models, such as the establishment chain and psychic distance market selection criteria, which have exposed the stage models for criticism from INV researchers over the past few years.

Other studies that aim to do the same integration between the *Uppsala* model and network theory are Coviello and Munro's study of rapidly internationalizing Canadian Software firms (1997) and Eriksson and Chetty's (2003) quantitative study of Swedish firms. The common denominator for these studies is that they seek to lift the focus out of the expanding firm alone and into the network context in which it operates. For example, Coviello and Munro's principal conclusion is that the experiential knowledge does not necessarily need to be accumulated within the boundaries of the internationalizing firm but might as well be embedded in the international business network the firm employs for its international activities. Eriksson and Chetty (2003) elaborates on the firm's ability to accumulate experiential knowledge in its business network and conclude, like Coviello and Munro, that experiential knowledge can be accumulated in networks, however that dyadic relations are more efficient for bridging gaps of experiential knowledge than through customer business networks.

The recent developments of the *Uppsala* model are indeed welcome in order to make the model better fit to explain modern phenomena of international business. However, it remains to see whether these new features of the model stand the test of empirical analysis. I will discuss this in more detail below.

### *The Innovation-Related Internationalization Model*

Already before Johanson and Wiedersheim-Paul's seminal paper on what later came to be known as the *Uppsala* model, British researchers published some interesting studies of internationalizing firms where they conceptualized the internationalization process as an innovation process. However, it was American researchers, especially from the University of Wisconsin, that became most known for model and hence the name the *American Innovation-Related Internationalization* model has often been attached to the perspective (Andersen, 1993).

### *Theoretical Roots*

Early theorizing was heavily influenced by innovation researchers such as Rogers (1962) and Schumpeter (1961). This is clear both from Simmonds and Smith's (1968) seminal paper and Bilkey's (1978) later attempt to make a comprehensive integration of the literature. Simmonds and Smith were the first to introduce the thought of looking at the internationalization process as an innovation. However, it should be noted that the type of innovation the model treats is an intra-firm innovation and seems pretty far from the industry innovations that have made Schumpeter familiar. Rather, they conceptualized the transition from a purely domestically oriented firm into an exporting firm an innovation process along the same lines as Rogers (1962) conceptualized the adoption of a new production process. That way emerged the concept of the stage-wise internationalization as the firm adapted to the marketing innovation of selling their goods and services abroad.

Simmonds and Smith (1968) was also inspired by other British studies (see e.g. Tookey, 1964) that concluded that the initial stages of an internationalization process is often driven by active, powerful and aggressive top managers. As a consequence, the top managers became the prime unit of analysis and the prime research question became what effect these managers had on each stage in the process. As Cavusgil (1980) notes, the internationalization process is often driven by an "internal change agent" that pushes the idea for export through the decision structure of the organization.

Even though the theoretical rationale for the *Innovation-Related internationalization* model is the intra-firm innovation process of adapting to a new marketing paradigm, several studies employing the very same framework concludes that the process might very well be initiated from external parties. Two often cited examples of this is Lee and Brasch (1978) and Bilkey

(1978). The first even concluded that in 65 percent of the investigated cases the process was initiated from external parties.

#### *Distinguishing Features of the Innovation-Related Internationalization Model*

The model depicts the internationalization of the firm as a stage-wise process where the firm gradually adapts to international marketing. There has never been reached full consensus on the number and defining features of the different stages in the internationalization process under the *Innovation-Related* framework. Bilkey and Tesar's (1978) six-stage framework might be the most cited, but there are also other suggestions with fewer stages (see e.g. Andersen, 1993; Cavusgil, 1980 for a review). However, as a synthesis the *Innovation-Related* model asserts that the export activity is considered the innovation which the individuals and the organization as such initially has to perceive as possible, since gain a first insight into, and in later stages form an attitude to, decide to adopt (or reject), and then implement fully as a strategy of the firm.

The *American Innovation-Related Internationalization* model focuses very much on processes that cannot be regarded as innovative in the market place as such. Rather, the export activity may be new to the firm and its managers that have to adopt different ways of organizing and marketing their existing product. This process of adoption is mainly taking place as incremental developments based on experiential knowledge.

Even though the *Innovation-Related Internationalization* model constitutes an important and highly used framework of internationalization, I have not been able to identify any studies that have employed this model to investigate INVs.

#### *The Holistic Perspective*

The firm that internationalizes right from inception represents the core phenomenon of the new *Holistic* theory building in international entrepreneurship. As these studies were triggered by the obvious shortcomings of the existing models when it comes to INV characteristics, scholars in the field have to a large extent endeavored to build new models and disengage from traditional views of the process. Especially, empirical studies like McDougall et al. (1994), Bell (1995), Jones (1999), McAuley (1999), Crick and Jones (2000), and Moen and Servais (2002) have documented that new firms often exhibit far more heterogeneity in their internationalization manner than the incremental internationalization models account for, and

hence call for a *Holistic* model of internationalization that incorporates the diversity of firm internationalization patterns. A holistic perspective on firm internationalization is defined by Jones (1999, pp 15) to be a process “*in which interrelated and even integrated decisions and processes combine to accomplish a firm’s individual pattern of internationalization*”.

Through the disengagement from the traditional views, support for new views has been grounded in other organizational perspectives. However, Penrose’s seminal work from 1959 still represents a major source of inspiration, however other features of her work is highlighted, namely the resource-based view of the firm and the role of the entrepreneur.

The first serious effort to create a new model adapted to INVs was published in *Journal of International Business Studies* by Oviatt and McDougall in 1994. The model is an integrative framework based on theories from strategic management, international business and entrepreneurship. Basically, the model depicts four necessary and sufficient conditions for the existence of INVs. The first condition is the internalization of some transactions. This argument originates from transaction cost theory and Ronald Coase’s (1937) seminal work entitled “*The Nature of the Firm*”. This theory postulates that organizations occur because some transactions are more efficiently executed within the boundaries of an organization instead of by the means of arms length transactions in the marketplace.

The second element is taken from the entrepreneurship literature and deals with the general resource poverty of new organizations. Due to lack of resources, new ventures often employ alternative governance structures (or hybrid structures) to control the productive resources. This is a general feature that distinguishes new organizations from older (Vesper, 1990).

The third element is what distinguishes domestic firms from international firms, namely their foreign location advantage. This argument originates from the international business literature and Dunning’s eclectic paradigm (1980; 1988) and basically argues that some firms are international because they profit from moving some resources from one market to combine it with immovable resources in another country.

The final necessary and sufficient condition for the emergence of INVs is unique resources. This argument comes from the resource-based view of the firm, which has its roots in the same work as inspired the stage model scholars, namely Penrose’s (1959) theory of the

growth of the firm. Penrose's perspective of looking at organizations as bundles of resources and capabilities has been developed by scholars of strategic management the past two decades (Amit & Schoemaker, 1993; Barney, 1991; Barney, 2001; Conner, 1991; Grant, 1991; Wernerfelt, 1984), and has been used increasingly in both international marketing and entrepreneurship literature. Oviatt and McDougall's (1994) argument of the final necessary and sufficient factor is a typical resource-based argument and incorporates the necessity of unique resources for sustainability of a new venture.

#### *Distinguishing Features of the Holistic Perspective*

What distinguishes this perspective of internationalization from the *Uppsala* model is that it treats experiential knowledge as just one of many resources in an INV resource bundle. Hence, the emergence of INVs are not dependent of the internalization of experiential knowledge alone, but on the ability to govern resources by other means than internalization, the ability to move resources across borders at low cost, and sustaining a competitive advantage through developing unique resources. It is also a *Holistic* model in the sense that it does not determine a specific internationalization pattern that all firms assume, but allows heterogeneity through assuming relations between the internationalization manner of the firm, external factors, and firm specific resource profile, entrepreneurial attitudes and behavior. It should also be noted that this model only presents the necessary conditions for the existence of INVs and does not treat the nature of the underlying internationalization process.

#### *Recent Studies that Employ the Holistic Perspective on INVs*

The Oviatt and McDougall (1994) article has been a major source of inspiration for more recent studies that employ a *Holistic* view on firm internationalization. Research focus has primarily been directed towards one of three questions that naturally arise from the model.

1. Relations between resource characteristics and availability on the internationalization process of the firm.
2. Resource mobility and characteristics of firms and firm resources that is easily transferable across national borders.
3. Behavioral patterns and fundamental questions of entrepreneurship such as the sources of international business opportunities; the process of discovery, evaluation, and exploitation of international opportunities; and the set of individuals who discover, evaluate and exploit them (Shane & Venkataraman, 2000).

Hence, recent *Holistic* studies are often funded on resource-based theory combined with insight from the entrepreneurship literature. Another common feature of these studies is that they criticize the traditional models for their linear character, especially in terms of market selection and entry mode development, and argue that the internationalization process is influenced by a broad range of internal and external factors.

An early study that emphasized the role of both human and financial resources on the internationalization process of the firm was Bell's (1995) study of small software firms. Bell found the internationalization process to be influenced by client followership, market and industry specific factors, and constrained by a general lack of resources. He concluded that neither psychic distance nor the establishment chain gave a good explanation of the internationalization manner of these firms, and argued that the process is complex, dynamic, and interactive and linear models fail to explain them. Also Jones (1999) criticizes the linear determinism of stage models in her study of internationalizing high tech firms. She concluded that the tendency to form new relations on international markets did not occur incrementally, but rather cyclically with some periods of high activity, separated by long periods with less activity.

Preece, Miles and Baetz (1999) go deeper into the resource-base of the internationalizing firm and investigate differences between firms with different international dedication. They find that globally diverse firms differ in the sense that they are associated with more resource richness and experience, while firm that exhibit the same foreign sales share only in fewer markets are often constrained on resources but are associated with stronger managerial commitment to international marketing. The study concludes that international marketing is feasible even with a narrow resource-base; however as number of foreign markets and complexity increase international experience and resource richness become more valuable.

An additional example of a study that has applied a resource-based view is Burgel and Murray's (2000) study of entry modes. This study concluded that entry mode decisions are made in the intersection where available resources meet the demands of the foreign customer. The study concludes that INVs generally don't use resource intensive modes unless it is strictly necessary from a customer service point of view. The study also concludes that INVs most often employ the same entry mode in international markets as they do in the domestic market.

This finding supports that entry mode decisions are more a question of strategic resource allocation than a trade off due to international market uncertainty.

The first study that established the entrepreneurship perspective in the internationalization literature was McDougall, Shane and Oviatt's study of 24 INVs (1994). They investigated three fundamental entrepreneurial questions, namely who are INV founders, why are their new ventures international, and how do they organize their international activities. They concluded that INV founders are entrepreneurs that are able to see international opportunities from successful combinations of resources from different markets, and that they tend to have this ability due to their extensive international experience. More intriguing, they concluded that INV entrepreneurs formed ventures that were international from the start due to path dependence in the general resource development of the firm. Founders basically wanted to establish international business routines and resources from inception to avoid the troublesome innovation process that many domestically oriented firms experience when they turn to international markets, and which constitutes a core argument in the "*Innovation-Related*" internationalization model.

Three studies that also take an *Holistic* perspective and emphasize the role of the entrepreneur is McAuley's (1999) study of firms in the Scottish arts and craft sector, Crick and Jones (2000) study of UK high tech firms, and Crick, Chaudry and Batstone's (2001) study of minority-owned firm in UK clothing industry. All these studies conclude that the role of the entrepreneur is central in the internationalization process of new firms, both for the speed of internationalization and for the subsequent international behavior of the firm. They also conclude that unplanned internationalization is widespread, and that entrepreneurs are often pulled into internationalization without initial strategic intent. However, it is interesting to see the great variety in the motivation for quick and extensive internationalization in these studies. Crick et al.'s (2001) minority-owned firms expanded early to exploit their international business network in the area of their ethnic origin. Crick and Jones' (2000) high tech firms exhibited often a more planned internationalization, but it was primarily motivated from the insufficient size of the domestic market. McAuley's (1999) firms internationalized in an ad hoc manner often through contact made at trade fair or through personal networks, and seem to be motivated from the opportunity for increased sales and profit.

Even though scholars frequently lean on a *Holistic* perspective when designing INV research projects, it can not be categorized as one comprehensive theoretical model or a theory. Much work remains in order to give the *Holistic* perspective the theoretical solidity that characterizes for example the *Uppsala* model. This is a major shortcoming and challenge for scholars in the *Holistic* school, and in order for the perspective to be legitimate in the world of research, efforts should be directed towards building rigid models and concept around which researchers can unify.

#### *How This Dissertation Contribute in the Discussion on Internationalization Perspectives*

The literature review presented in paper 1 illustrates the point that many researchers that study INVs seek to disengage from the traditional models in the conceptual framework presented in their papers. The main finding from the empirical section of the literature review is that there exists surprisingly great heterogeneity in the internationalization patterns among INVs. That may also be the reason why most of the reviewed papers employ a *Holistic* perspective on firm internationalization. That is, their conceptual stance is that both internal and external factors, and the managerial decisions made in the intersection, form the basis of firm specific internationalization patterns.

It is an interesting observation that the recent developments on the *Uppsala* model (see e.g. Coviello et al., 1997; Johanson et al., 2003) account for a great deal of the observed heterogeneity in internationalization pattern among INVs. And findings from paper 1 indeed support that the role of business networks, and especially the ability to use hybrid structures for international operations, play an important role for INVs. Based on the vast amount of literature that has been published over the past decades from the *Uppsala* tradition, it is beyond doubt that the *experiential learning – commitment* interplay indeed is a process that normally takes place in the internationalization process of a firm. What rightfully can be doubted is whether this process is so dominating within the boundaries of an INV that it governs the whole process.

It is the author's opinion that a more rewarding venue would be to look at the *experiential learning – commitment* interplay as only one of many underlying processes that drive the internationalization process forward, and that the lack of experiential market knowledge only represents one of many potential resource gaps that the INV need to close in order to succeed with an extensive and rapid international expansion.

Even though the *Holistic* perspective dominates the INV literature, it is striking to see the lack of unity in conceptualizations and frameworks of understanding. The framework as presented by Oviatt et al. (1994) is also strikingly incomplete as it is only a theoretical presentation of necessary conditions for the emergence of INVs and postulates little, or nothing, on the processes involved.

The typology and performance evaluation in paper 2 also adds some valuable insight in the relationship between the competing theoretical perspectives. The study concludes that the firm's strategic intent, competitive strengths and strategic focus trigger highly different internationalization patterns, which is a strong argument for a *Holistic* perspective on firm internationalization.

It is tempting to suggest that the different theoretical perspectives might dominate differently in the different clusters presented in the typology. The first two groups, labeled *Born Globals* and *Early Internationals*, represent the typical INV and need to overcome a variety of resource gaps to realize an ambitious and necessary early internationalization. What separates the two groups is that the *Early Internationals* lack the competitive strength and strategic focus of the *Born Global* firms, and thus exhibit less of the international expansion of the *Born Globals*. In order to understand the behavior of these two groups the *Holistic* perspective appears to be the most appropriate. The *Late International* cluster display an internationalization manner which is more in line with the slow, incremental internationalization pattern as presented in the stage models. The fourth cluster, the *Late Globals*, at least shows evident similarities with the *Innovation-Related Internationalization* model, and that the organizational innovation of turning a domestic organization into a truly global firm is extremely troublesome and occurs only rarely.

Both the typology paper (paper 2) and the paper on initial resources (paper 3) discuss path dependency, which is one of the four distinguishing features of the *Uppsala* model. The typology paper discuss path dependency in the internationalization process specifically and especially in relation to *Late Global* firms. The paper on initial resources present path dependency as a general development feature that occurs in all resource development processes, hence also in relation to international expansion. I therefore dare to conclude that

the path dependency feature of the *Uppsala* model is justified also under a different internationalization perspective.

The final paper on the role of ICT (paper 4) brings forward an external factor that affects the internationalization process of small firms, namely the increasing access to low-cost advanced information and communication technology. The study concludes that there indeed is a relationship between the increased internationalization of small firms and the advent of the Internet and other supportive means of electronic communication. Hence, external factors, such as the supply of facilitating means, can significantly influence the internationalization of firms and therefore deserve acknowledgement in internationalization models.

To bring to a close the theoretical part of this discussion I conclude that this work has brought forward some advantageous aspects of the *Holistic* perspective on new firm internationalization. However, it should be noted that there are still some important features from the stage models that deserve further attention and should be incorporated in new theory building under the *Holistic* perspective.

#### *Limitations and suggestions for further research*

The studies presented in this dissertation have several limitations, which represents interesting venues for further research. First of all, it is the author's own view that this work has pointed to more shortcomings in the contemporary literature and theory than it has contributed with answers to these shortcomings. This is primarily a result of the immaturity of the *Holistic* perspective as a conceptual stance, but also due to the equal immaturity of international entrepreneurship as a field of research. It is my recommendation that we should build solidity to the first, in order to gain legitimacy and attract new researchers to the latter.

This piece of research has defined some fundamental concepts within the field of international entrepreneurship, further it has reviewed the use of these concepts in the literature and presented a typology of small international firms. However, it falls short of serving as a complete platform for a new theory of the internationalization of the firm; a *Holistic* internationalization model. A considerable conceptual effort is needed before the *Holistic* perspective stand out with the rigidity of other internationalization theories.

Another shortcoming of this work is that the empirical studies are strictly quantitative and fails to unveil the micro-relations in the processes within the INV that render possible or facilitate a rapid and extensive internationalization. I suggest more qualitative research in order to unveil the internal processes that take place in INVs to bridge different types of resource gaps that naturally appear in the internationalization process of a new firm under resource constrictions. I also suggest more focus on the relationships between internal resources and external factors that have special importance for the internationalization process of new firms.

Subsequently research efforts should be, as pointed out in the literature review, directed towards more quantitative research based on random sampling, to unveil which internal processes and resource gaps that rightfully deserve attention under the *Holistic* framework.

### **Implications for Practitioners**

The literature review (Paper 1) treats a broad range of issues that have special interest for practitioners. Under the subtitles *Development of International Activities in New Firms*, *Technological and Organizational Issues*, *Founder Characteristics and Team Composition*, *International Strategy*, and *Performance* the paper presents the state-of-the-art in the most prevalent issues that INV managers must relate to. However, in order not to repeat later chapters I will only refer to the empirical section in paper 1 here, and proceed with two overarching topics that represent the main managerial take-aways from this piece of research.

First, this dissertation offers new perspectives on international opportunities for new firms. This regards both when an internationalization strategy can be initiated, what it demands of strategic focus, and the potential rapidity and heterogeneity of the process. It has shown that internationalization can be a promising strategy for many firms even without significant resources or market experience. However, it requires possession of some sort of competitive advantage that also contains value in foreign markets. It also requires extreme strategic focus on specific product markets and on specific strategic means. Given international competitive advantages and strategic focus, there are no absolute restrictions that rule out rapid and extensive internationalization even for small and newly established firms. Furthermore, there are few indications that INVs follow the “*establishment chain*” development as described in the traditional models. On the contrary, our literature study shows that INVs exhibits great

heterogeneity and creativity in entry modes. It does not seem like the “*establishment chain*” is a good model for how INVs actually choose, or should choose, new market entry modes.

The second important take-away regards the resource development process in internationalization processes. The notion that the internationalization process is path dependent is actually unanimous from all the theoretical perspectives presented in this dissertation. However, this research has shown that there seems to be a closing window of opportunity for firm internationalization. Previous studies have indicated and the typology study (paper 2) concluded that older firms are less likely to turn into true global firms. The underlying reason for this is found in the established organizational routines, resources and external ties of the domestic organization. Internationalization may require different routines, different resources, and different external relations than the organization already have established domestically and hence the established routines, resources and relations may turn into liabilities that demands a painful and resource demanding process to overcome. Thus, the advice is: Internationalize before domestic cementation!

### **Implications for Policy Makers**

From the findings in this dissertation, I dare to conclude that policy programs designed from the earlier theoretical foundations, that take a stage-wise perspective on firm internationalization, are ill-suited to promote internationalization of new firms of the 21st century. Numerous arguments for this conclusion can be found in both the theory review (paper 1) and descriptive typology study (paper 2) presented in this dissertation. We show that INVs possess some characteristics that one would not expect from the stage model perspective, and moreover, that early internationalization constitutes the rule rather than the exception among small Norwegian firms that operates abroad.

Hence, the question remains how new internationalization incentives can be designed in order to increase the effect on foreign output. Traditionally, export support programs have targeted established firms that already has proven their ability in domestic markets and hence seek to profit on opportunities abroad (Bell & McNaughton, 2000; Fisher & Reuber, 2003). Moreover, there has been a tendency to focus the effort on some industries that presumably are more “high tech” than others. The findings from this research suggest a different approach.

The finding in paper 2 that early internationalization constitutes the norm rather than the exception suggests a radical change from what has been postulated in traditional internationalization models, namely that focus should be set on new firms. Keeping key findings from this dissertation in mind, namely that firms that internationalize late very seldom becomes truly global (paper 2) and that the initial phases of firm development have a strong impact on the firm's subsequent performance (paper 1 and 3), it seems to be clear that new firms should be given at least the attention of established actors when designing export promotion programs.

Findings from the literature review (paper 1) and the typology study (paper 2) suggest that further segmentation of the market for export support programs might not give a desired effect. The analysis showed that very few demographic variables differentiated the groups of firms and none to the extent that it would justify exclusive focus on any of the groups. The obvious danger is that by focusing efforts on some segments of the small business market one excludes important contributors that fall outside the target group.

Neither do the findings in paper 2 support exclusive focus on technology-based firms in the sense that technology-intensive industries should be prioritized in export promotion programs. Our investigation reveals no differences between different types of international firms in terms of industry affiliation. I believe this common misunderstanding that some industries are more technology-intense and hence more likely to internationalize. Some of this misunderstanding stems from inconsistent use of the term "high-tech" and technology in general. It is obvious that an industry which is generally known to be technology-intensive is no more prone to internationalize if the technology in question already is commonly available in international markets or if there is no international demand.

A more rewarding association of the term technology would be to tie it to the Schumpeterian or Austrian effect it would have if it were introduced into a new market as described in the introductory section above. This framework offers a better understanding of whether any innovative firm is able to increase efficiency in the market they intend to enter, and hence have a competitive advantage, or whether there are existing business solutions or technologies that are more efficient already operating in the foreign market in question.

Regarding the content of export promotion programs, I also suggest change from what previous models suggest. The final paper in this dissertation that ties the recent advances in ICT to the increased internationalization of new firms concludes that information and knowledge gaps that traditionally have been viewed as the major inhibiting factor for firm internationalization, have to a certain extent been bridged by use of ICT in international marketing. Hence, in the modern economy there seems to be general resource poverty (Oviatt et al., 1994) that inhibits the process rather than experiential knowledge resources alone. Along with several previous studies this study finds that small and new firms often overcome their resource poverty by partnering with one or more existing actors in international markets.

Hence, based on the latter, my suggestion for program content goes in the direction of identifying potential foreign partners, facilitating match-making between the internationalizing firm and preferred complementary business partners, and to assist the internationalizing firm with working out viable and sustainable business agreement that secures the long term interests of the internationalizing firms.

### **Conclusions**

This dissertation has presented a type of international firms that only recently have come to the attention of scholars, *International New Ventures*. The attention is well deserved as INVs, by their innovative character and will to expansion, not only represent a significant potential for creation of new wealth and employment, but also as entrepreneurial change agents with the potential to spread new innovations globally.

A comprehensive literature study on INVs, presented in this dissertation, shows that INVs are a type of business organizations that are increasing in numbers and already represents a considerable portion of firms in most developed economies, however it also appears to be a phenomenon that the current business theory renders limited understanding. This fact is partially due to the limited ability of existing theoretical models to explain and predict the existence and behavior of INV and partially due to great methodological and conceptual heterogeneity in INV studies that renders only few viable generalizations. This seems to represent the fundamental problem for INV scholars, namely that we present a large group of firms with an unquestionable potential, but to a certain degree fail to offer solid theoretical frameworks to guide practitioners and policy makers to realize the potential.

The descriptive study, presenting a typology of small international firms based on the rapidity and extent of their internationalization shows how widespread the INV phenomenon has become in the Norwegian economy. It shows that rapid internationalization constitutes the rule rather than the exception among Norwegian small international firms, and furthermore, rarely can traditionally domestic firms turn into truly global actors. This is an important finding because it shows that in building international industries focus should be on new firms and not exclusively on established firm such as it traditionally have.

This study also investigates differences in firm performance between different types of international firms. This part concludes that there exist few differences in financial performance between the types of firms. This shows that from a financial perspective, an internationalization strategy in itself does not yield above average return on investments. The finding is also supported by an investigation into motivation for international expansion which shows that the necessity of targeting a larger market is vital for triggering INV internationalization. It is the author's conclusion that the latter explanation of necessity is far more outspread than the popular explanation that INVs target international markets from inception simply to create above average return or growth.

The final two studies presented here go in detail on two specific issues that have been frequently debated in the INV literature. One goes in-depth on the longitudinal effects off initial resources and concludes that resources present at firm founding indeed have long-term effects on firm performance. This is partially due to the fact that narrow resource bases constrain the range of strategic options for the firm and partially due to the long-term consequences of strategic decision-making regarding early resource development. This is an important finding for practitioners as it shows that the resource development process of the firm is oath dependent and that the initial phases of the new venture as it creates an image of what the organization is going to be in the future and also lays the ground for organizational routines and functions that must be compliant with requirements of future growth.

The other study also goes in-depth on a relationship with special implications for practitioners, namely the relationship between emerging advanced information and communication technology and the simultaneous growth in small international firms. This study concludes that, when advanced ICT is integrated with the firm's international business

activities, it can significantly increase both the international exploitation and exploration capabilities of the firm and hence the international performance of small firms. The study also revealed an interrelated dependency between several firm internationalization-related factors and the use of ICT, which shows that ICT appears to be especially valuable in the internationalization process of small firms with international ambitions that seek to sell technologically sophisticated products or services in niche markets.

The overall conclusion of the thesis is that the further development of internationalization models should take a *Holistic* view where both external factors and internal resources should be put on par with experiential market knowledge as explanatory variables in the internationalization process. It seems, from the research on INVs that internationalization patterns of small firms vary to such a degree that new models should acknowledge firm internationalization to be firm specific and rather focus the attention on relationships between firm resources, strategies and external factors that create the unique internationalization of firms.

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Paper 1

International New Ventures:  
A Review of Conceptualizations and Findings

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# **International New Ventures: A Review of Conceptualizations and Findings**

## ***Abstract***

The review covers 41 articles published in 20 journals, spanning the years 1992-2002, on the topic of International New Ventures; that is, firms that are active in international markets almost from inception. The articles reflect widespread agreement as to the fact that the prevalence of such firms has increased, but maintain great diversity in the empirical delineation of the phenomenon. This may be one of the reasons why very few generalizations seem viable.

## **Introduction**

Prior to the seminal work of Oviatt & McDougall in 1994, the research streams focusing on entrepreneurship and internationalization, were only rarely combined. After the seminal studies of internationalization processes of firms in the beginning of the 1970s (e.g. Johanson & Wiedersheim-Paul, 1975; Bilkey & Tesar, 1977), numerous empirical studies have supported the notion that firms initially gain a strong foothold in their domestic market before they leap into international business. Accordingly, the entrepreneurship literature has traditionally not focused on international market dimensions (Oviatt & McDougall, 1994). In theory, as well as in practice, entrepreneurship occurred in domestic market settings. This is no longer the case. As we will see, over the past ten years some of the literature on entrepreneurship and internationalization has been more closely related in terms of the effort to describe and understand the relatively new phenomenon of infant firms that operate internationally right from inception.

The contribution of this article is that it offers a comprehensive review of conceptual, as well as empirical research on this phenomenon, covering both the entrepreneurship and the internationalization research streams.

The international marketing and business literature embodies different theoretical models that attempt to explain the slow and incremental internationalization processes of firms, the most well known approaches being stage models such as the Swedish "*Uppsala Internationalization Model*" and the American "*Innovation-Related Internationalization Model*" (Andersen, 1993). In the late 1980s, researchers began to question the universality of these stages models. Johanson & Mattsson (1988) proposed that firms that initiate their internationalization process in an already internationalized market (so-called Late Starters) would behave differently. Ganitsky (1989) demonstrated that some firms in Israel (so-called Innate Exporters) even served foreign markets right from their inception. A few years later, McKinsey & Co. coined the term "Born Globals" for this type of firm (Rennie, 1993). Knight & Cavusgil (1996) and Madsen & Servais (1997) adopted this term, which has been used by many international marketing and business researchers since then.

In the late 1980s, the research into entrepreneurship and its international aspects, started to gain interest. McDougall & Oviatt (2000) reported that a task force on international issues

was formed in the early 1990s within the Entrepreneurship Division of the Academy of Management. Succeeding that initiative was the influential contribution by Oviatt & McDougall (1994), who coined the term “International New Ventures” (INVs) to designate firms that are internationally oriented from inception. They integrated international business, entrepreneurship, and strategic management theory in an attempt to better understand the phenomenon.

This article reviews the academic research on the topic over the years spanning 1992 –2002. We have chosen to use the INV concept to designate this type of firm since it is the broadest concept proposed in the literature. Conceptual as well as empirical contributions from 41 articles found in 20 different academic journals have been included. As shown below, leading journals in international business and entrepreneurship, as well as in marketing and management have been examined in the review process. The article is organized as follows. The methodology applied in the review process is described. A summary follows, outlining how individual authors have conceptualized the phenomenon of INVs, and includes their opinion with respect to why the phenomenon is interesting and how each proposes to model it for further research. The main part of the article reviews the empirical studies that have been carried out in an attempt to describe and understand the consequences of the phenomenon for theory, managers, and public policy makers. The article concludes with a discussion of appropriate research agendas for the study of this type of firms in future research.

### ***Methodology***

Since previous research on INVs has been carried out across various research areas we chose to search for relevant articles in general management and marketing periodicals as well as in more specialized journals which focus on international business, marketing, management, or entrepreneurship. We identified a set of twenty core journals within these areas, as shown in Table 1. Some of these journals focus on international aspects of business while others focus on general marketing, management, entrepreneurship or small business management. This set of journals includes the same twelve journals used in a recent review of the internationalization of smaller firms (Coviello & McAuley, 1999).

**Table 1: Journals Reviewed for Relevant Articles**

<b>Entrepreneurship</b>	<b>International aspects</b>	<b>Marketing/management</b>
Entrepreneurship & Regional Development	Advances in International Marketing International	Academy of Management Journal
Entrepreneurship Theory & Practice	Business Review	Administrative Science Quarterly
International Small Business Journal	International Marketing Review	European Journal of Marketing
Journal of Business Venturing	Journal of International Business Studies	Journal of Marketing
Journal of Small Business Management	Journal of International Marketing	Journal of Marketing Management
Small Business Economics	Journal of Global Marketing	Strategic Management Journal
	Management International Review	Strategic Marketing Journal

To be eligible for the review an article must have been published between 1992 and 2002 (both years included). The phenomenon was only rarely mentioned in scholarly journals prior to 1992. Furthermore, to be selected an article had to focus on the phenomenon of infant firms that operate internationally right from or close to inception. In addition to the articles selected using the criteria mentioned we also included two articles from other journals (Rennie, 1993; Jolly et al., 1992) because they are early and often cited contributions. Since the phenomenon of INVs is relatively new, we chose to review conceptual, in addition to empirical, articles. By doing so, we endeavored to uncover differences in the conceptualization of the phenomenon that may have caused differences in the empirical findings. An empirical article is defined as an article that includes new, primary data about this type of firm. A conceptual article normally does not introduce empirical data, but may sometimes summarize previous empirical findings which, for example, were obtained through case studies of individual firms. In total we identified almost 100 articles, of which more than 50% only marginally treated the phenomenon in question. As a result we retained 13 conceptual and 28 empirical articles for the final review (see Table 2 for a short description of the empirical studies). Almost all the articles selected had been published in specialized journals in entrepreneurship or international marketing/international business. Very few were published in general management and marketing journals, perhaps because early research was primarily descriptive with limited theoretical contributions.

The main points of each conceptual article were summarized and categorized with respect to its definition, as well as its proposed modeling of the phenomenon, antecedents, consequences, and its reflections as to why the phenomenon is an interesting research topic.

During the review process each study was condensed into a one or two page summary with respect to its research focus, methodology, and main findings. The latter were categorized in the same manner as they are presented in the empirical section of this article: the development of international activities in new firms, technological and organizational issues, founder characteristics and team composition, international strategy, and performance. These categories were employed because they represent the most frequently debated issues in the studies reviewed. It should be noted that the categorization is not exhaustive. There are studies in our sample which have treated INV features other than those we have discussed here; however in order to reduce complexity and make the material more accessible for the reader, we have limited the discussion to the mentioned topics.

### ***Conceptualizations of the Phenomenon***

There is general agreement among the authors that the phenomenon of infant firms, which operate internationally right from inception, is an interesting research theme for theoretical as well as managerial reasons. Theoretically it challenges the stage theory of internationalization (e.g. Axinn & Matthyssens, 2002; Knight & Cavusgil, 1996; Oviatt & McDougall, 1994). McDougall et al. (1994) argues that existing theories of internationalization (monopolistic advantage theory, product cycle theory, stage theory of internationalization, oligopolistic reaction theory, internalization theory) all fail because they assume that firms become international long after their formation, and furthermore because they focus on larger and mature firms and largely ignore the importance of the individual (the entrepreneur) and his/her network. As a consequence, established theories are less applicable, or inadequate, when seeking to explain or predict the internationalization behavior of INVs.

From a decision making point of view the phenomenon is interesting because of its increasing prevalence and importance in international competition (e.g. Bloodgood et al. 1996; Knight & Cavusgil, 1996) as often reported in the business press as well as in OECD reports and scientific journals of the last decade. The present business environment allows “.. *even the smallest firms access to customers, suppliers, and collaborators around the world*” (Etemad & Wright, 1999, p. 4). The phenomenon has largely been reported in high-tech industries, but appears to occur in a wide range of industries (Oviatt & McDougall, 1994; Madsen et al., 2000, Knight, 2000). Managers as well as public policy makers (Ganitsky, 1989; Moen, 2002) therefore, have a great interest in gaining additional knowledge about the way in which new

firms can overcome the dual hurdles and challenges of starting a new business as well as starting international activities. It is also important to gain new insight with respect to how possible synergies in the collaboration between small, entrepreneurial firms and large, international companies can develop (Etemad & Wright, 1999), and how even small firms may out-compete large, international firms (Knight & Cavusgil, 1996).

The general accord regarding the relevance of the research topic is not, however, always present with respect to the definition and operationalization of the phenomenon. Different viewpoints arise relating to concepts such as ‘international’, ‘inception’ or ‘new’, but also as to the question of the importance of the firm’s domestic market.

When describing the phenomenon, many authors refer to Oviatt & McDougall (1994) who define an INV as “... *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*” (p. 49). These authors themselves emphasize that resources need not be controlled through ownership. According to Kummerle (2002, p. 100), a new venture is considered international in nature if it uses extant firm-specific knowledge (home-base exploitation primarily through knowledge flows related to manufacturing or sales activities) and/or increases its stock of knowledge (home-base augmentation primarily through knowledge flows related to research and development activities) through activities in foreign markets, right from its inception. Similarly, Hisrich et al. (1996) propose to study cases in which an entrepreneur or a venture crosses national borders. Becoming ‘international’ according to these definitions may occur through a wide range of activities such as exporting, sourcing, etc.

In spite of their broader definition, Oviatt & McDougall (1994) do argue that the commitment of resources to sell output abroad is the decisive factor: a statement which they elaborate upon in McDougall & Oviatt (1996), declaring that significant foreign sales is the defining interest of an INV, since obtaining foreign sales is more difficult than obtaining foreign inputs. Knight & Cavusgil (1996) focus explicitly on the sale of output in their definition of the Born Global phenomenon. Madsen et al. (2000) and Moen (2002) adopt an operationalization similar to Knight (1997), according to whom, a Born Global firm starts exporting within three years after inception and has foreign sales of at least 25%. This emphasis on the internationalization of sales is found in most other literary contributions. According to these definitions, being

‘international’ simply requires that the firm engages in sales activities in more than one country.

With respect to ‘inception’ there seems to be consensus maintaining that only independent firms, and not subsidiaries of larger firms, should be studied. Giamartino et al. (1993) argues that only ventures that begin as international under the founder’s tenure should be included. As Oviatt & McDougall (1997) point out, however, the time of inception cannot be operationalized unambiguously; the inception juncture could be deemed the first time serious firm planning occurred, or perhaps the instance a legal entity was formed, the occasion of first sales, etc. They also observe that the entrepreneurship literature often treats firms as ‘new’ up to six years after their inception, whereas Knight & Cavusgil (1996) require that the firm engage in international activities from the earliest days (within a few years) of their establishment.

Finally, some authors propose to study the more general phenomenon of accelerated internationalization (Axinn & Matthyssens, 2002; McDougall & Oviatt, 2000), or the time-span between inception and internationalization on a continuum from being international right from inception to firms that never internationalize (Osterlee, 1997). Such an approach does not view the phenomenon as radically new, but would attempt to study it as a special case of the more general internationalization processes. This is in accordance with Bloodgood, Sapienza & Almeida (1996) as well as Madsen & Servais (1997) who argue that the theoretical reasoning behind the traditional stage models does have some merit when trying to understand the internationalization pattern of INVs. For example, experiential knowledge about international operations may rest within the individual entrepreneur and consequently an INV does not have to go through a slow and gradual internationalization process. Furthermore, psychic distance (Johanson & Vahlne, 1977; Stöttinger & Schlegelmilch, 1998) as well as perceived uncertainty and risk must be viewed in relation to the decision maker. If a decision maker has extensive experience from a distant culture, his/her ‘personal’ psychic distance to that culture may be low. In a similar vein Oviatt & McDougall (1997, p. 96) note that *“If entrepreneurs generally have more foreign market experience than in earlier periods of history, ....., and if increased experience is the predominant explanation of accelerated moves into foreign markets, then the Uppsala model is reinforced. If the basis for explanation is otherwise, the need for new formulations of international process theory is reinforced”*.

As demonstrated, there is no consensus in the literature with respect to central definitions and operationalizations of the phenomenon. However, regardless of their conceptualization of the phenomenon, all authors agree that internationalization processes may take place with much higher speed today than was the case just a decade ago. There is also wide agreement about the drivers affecting this situation: developments towards low-cost, high speed, and efficient communication technologies, as well as low-cost transportation methods have pulled many small firms into international markets very quickly. Additional market factors pertaining to the harmonization of regulatory and institutional contexts across borders, flexible production processes, as well as the increased prevalence of niche markets and international sourcing networks may serve as facilitators of the internationalization of new and small firms. Many authors emphasize that most individuals have increased their international experience and networks through their education, travels, and previous jobs. In relation to new ventures this may create entrepreneurial visionaries with a very high international orientation. Such individual factors are clearly important facilitators and drivers of accelerated internationalization. Other internal factors that increase the prevalence of INVs may be ownership advantages building on radical innovations, (Osterlee, 1997) or the general small firm advantages of flexibility and adaptability (Knight & Cavusgil, 1996).

Different theoretical approaches have been recommended for future research, but their authors have not been very precise with respect to how this should be accomplished. The formulation of detailed theoretical models is lacking. Oviatt & McDougall (1994) propose to analyze four subcategories of INVs depending on their geographical scope and the number of value chain activities they coordinate. They propose a theoretical model focusing on the idea that these firms overcome disadvantages vis-à-vis indigenous firms through private, valuable knowledge that can be reproduced and transmitted by means of modern communication technologies. Expropriation of such knowledge should be possible to avoid because it is proprietary, imperfectly imitable, and controllable through network relationships. McDougall et al. (1994) proposed a more explicit focus on the entrepreneur by stressing that markets are in disequilibrium because of the lack of complete information about profit opportunities for entrepreneurs who are alert and able to see them (individual factor).

The previous experience of the entrepreneur is important for such alertness because it influences the individual's ability to interpret information. The importance of including founder characteristics prior to inception is emphasized also by Madsen & Servais (1997) who

point to evolutionary or resource-based theories as possible theoretical frameworks for the analysis of routines, decision making rules and capabilities, and hence path dependencies that can explain the internationalization pattern of these firms. The network approach opens up for the possibility that the commitments and current activities of collaborating firms may also have an impact on the internationalization behavior of the individual firm.

In addition to the theoretical approaches mentioned, Bloodgood, Sapienza and Almeida (1997) model advantages by means of the resource-based view of the firm and hypothesize that the international exposure of top management as well as sources of competitive advantage, innovation, and size are the determinants of the extent of internationalization and performance. Furthermore they argue that *“Monopolistic advantage theory and stage theory contain the premise that advantages, knowledge, or experience can be used to compete effectively internationally. Following these theories, we will argue that the firm’s possession of specific advantages, knowledge, and experience is key to whether new ventures will internationalize early and whether such efforts will be successful”* (p. 64).

In conclusion, there is widespread agreement in the literature that the phenomenon is an interesting candidate for further study. There is also much agreement with respect to the drivers of the phenomenon, but no consensus regarding its definition and operationalization. Traditional theoretical models fail to explain the manifest internationalization processes of INVs, but many authors propose that existing theories in organization theory, strategy, international business and marketing offer promising alternatives for further theoretical work concerning the conceptualization of the phenomenon. Empirical knowledge about INVs is, of course, also helpful in the process because it may serve as the basis for inductive theorizing about the phenomenon. So far, however, a thorough review of empirical findings concerning the phenomenon has not yet been carried out. Such a review is provided in the subsequent section and will constitute part of the foundation for our proposals with respect to fruitful research avenues in the future.

### ***Empirical Findings***

Empirical investigations indeed suggest that INVs constitute a significant segment of the modern economy (Rennie 1993; Burgel & Murray 2000). Comprehensive survey data show that INVs account for a significant share of international firms (Jones 1999; McAuley 1999;

Burgel & Murray 2000; Moen & Servais 2002) and that they are increasing in numbers (Aspelund & Moen 2001). In particular, INVs represent a considerable portion of firms in small, open economies (Madsen et al. 2000; Moen 2002). Empirical research therefore reinforces the theoretical arguments pertaining to the idea that the phenomenon is interesting. Below we summarize the main findings of 28 empirical studies (see Table 2 for an overview). As mentioned earlier we limit ourselves to reporting on findings that relate to the five issues mentioned most frequently in the surveyed articles.

**Table 2: Empirical Studies Reviewed**

<b>Authors (Year)</b>	<b>Journal</b>	<b>Country</b>	<b>Method and Research Focus</b>
Aspelund and Moen (2001)	Advances in International Marketing	Norway	Quantitative (335 cases). The effects of age on SME internationalization.
Autio, Sapienza and Almeida (2000)	Academy of Management Journal	Finland	Quantitative (59 cases, panel data, all electronic firms). Knowledge and learning theory applied to explore rapid internationalization of high-tech firms.
Bell (1995)	European Journal of Marketing	Norway, Ireland and Finland	Quantitative (98 cases, all software firms) with qualitative follow-up. Critical evaluation of incremental internationalization theories.
Bloodgood, Sapienza and Almeida (1996)	Entrepreneurship Theory and Practice	United States	Quantitative (61 cases, all VC-backed IPOs). The effect of initial conditions on post and pre IPO internationalization.
Boter and Holmquist (1996)	Journal of Business Venturing	Norway, Sweden and Finland	Qualitative (6 cases). Comparing internationalization in traditional manufacturers with innovation-oriented firms.
Burgel and Murray (2000)	Journal of International Marketing	United Kingdom	Quantitative (246 cases, all high-tech). High-tech firms' international entry modes and choice motivation.
Coviello and Munro (1997)	International Business Review	New Zealand	Qualitative (4 cases). Integrating incremental internationalization with network perspectives applied to market and entry mode selection.

Crick, Chaudry and Batstone (2001)	Small Business Economics	United Kingdom	Qualitative (20 cases). The internationalization of minority-owned firms.
Crick and Jones (2000)	Journal of International Marketing	United Kingdom	Qualitative (10 cases). Investigation of the internationalization process of high-tech firms
Jolly, Alahutha and Jeannet (1992)	Journal of Strategic Change	Various	Qualitative (4 cases). Exploratory, longitudinal study of successful INVs.
Jones (1999)	Journal of Marketing Management	United Kingdom	Quantitative (195 cases). A chronological investigation of the internationalization pattern of early phase, small high-tech firms.
Keeble, Lawson, Smith, Moore and Wilkinson (1998)	Small Business Economics	United Kingdom	Quantitative (two samples; 2000 and 100 cases). Quantify the importance and extent of int. processes and networks in tech-based SMEs.
Kotha, Rindova and Rothaermel (2001)	Journal of International Business Studies	United States	Quantitative (86 cases, all IPO, all Internet firms). Investigates antecedents of Internet firm internationalization.
Kuemmerle (2002)	Journal of Business Venturing	Various	Qualitative (6 cases). Apply FDI and knowledge management theories to scope and sequence of international activities.
Lu and Beamish (2001)	Strategic Management Journal	Japan	Quantitative (164 cases, all high growth). Examining the joint effect of exporting and FDI on SME performance.
Madsen, Rasmussen and Servais (2000)	Advances in International Marketing	Denmark	Quantitative (272 cases). Descriptive study of INVs compared to other types of exporters.
McAuley (1999)	Journal of International Marketing	United Kingdom	Quantitative (102 cases) with qualitative follow-up. The internationalization process of micro firms in the arts and craft sector.
McDougall and Oviatt (1996)	Journal of Business Venturing	United States	Quantitative (247 cases, all high-tech). Effects of internationalization and strategic change on new firm performance.
McDougall, Shane and Oviatt (1994)	Journal of Business Venturing	United States	Qualitative (24 cases). Assessment of current theories' ability to explain the formation of INVs.

Moen (2002)	International Marketing Review	Norway and France	Quantitative (405 cases). Compares Born Globals with other types of exporters.
Moen and Servais (2002)	Journal of International Marketing	Norway, Denmark and France	Quantitative (677 cases). Aims to examine the existence of gradual development patterns of firm internationalization.
Oesterle (1997)	Management International Review	Germany	Qualitative (1 case). How different types of innovation create different conditions for internationalization.
Preece, Miles and Baetz (1999)	Journal of Business Venturing	Canada	Quantitative (75 cases). Antecedents of international intensity and global diversity.
Rennie (1993)	McKinsey Quarterly	Australian	Quantitative (300 cases). Descriptive, exploratory study of INVs
Shrader, Oviatt and McDougall (2000)	Academy of Management Journal	United States	Quantitative (87 cases, 212 new market entry decisions). How international risk is dealt with in new venture foreign market entry.
Stray, Bridgewater and Murray (2001)	Journal of Global Marketing	United Kingdom	Quantitative (44 cases). Comparison study of different types of international firms.
Yeoh (2000)	Journal of International Marketing	United States	Quantitative (180 cases). Assesses INVs' need for information and how they bridge the information gap.
Zahra, Ireland and Hitt (2000)	Academy of Management Journal	United States	Quantitative (321 cases). Investigates internationalization, resulting learning effects and performance.

### **Development of International Activities in New Firms**

One of the defining features of INVs, and what first triggered academic interest, is that they do not follow the slow and incremental internationalization processes, as one might predict from traditional theories. Accordingly, several studies have addressed the question of whether the international expansion of INVs follows a rapid, but still incremental pattern, or whether they truly represent a new type of firm. Unfortunately, after a decade of empirical research the findings still appear to be inconclusive (Burgel & Murray 2000). Some authors don't find evidence of an incremental pattern (Jolly et al. 1992; McAuley 1999), while others argue the process is merely an accelerated, gradual process (Coviello & Munro 1997; Crick & Jones 2000). Finally, some suggest a cyclic model in which international ties are formed in intensive periods separated by periods of less activity (Jones 1999).

So, on the one hand there is no agreement that this is a truly new phenomenon, yet on the other hand, existing theories cannot explain it completely. For example, large-scale surveys have shown that central variables from the traditional stage theories, such as experiential knowledge do not seem to be key explanatory variables in the internationalization process of INVs (Burgel & Murray 2000). In addition, key variables such as the time dependence of international development, increasing entry mode commitment, and psychic distance have been shown to be of minor importance (Bell 1995; Moen & Servais 2002). Actually, even seemingly homogeneous firms exhibit great variation in international expansion patterns, and hence some authors conclude that new theory building seems to be needed. Many researchers in the field argue for a holistic view of the internationalization of the firm (Jones 1999; McAuley 1999; Crick et al. 2001) rejecting the idea that the internationalization of the firm can be explained by a linear model including only one or a few variables.

Consequently, the stage models seem to represent only one possible pattern of becoming international and they should therefore be rejected as general models of observable or manifest internationalization processes. Today's industry and firm characteristics offer much greater variety than before, thus the development of international activities in new firms also seems to exhibit much greater variation. It seems fair to conclude that variation in the forms of internationalization processes has increased, but the empirical studies do not offer clear recommendations with respect to the theoretical implications.

## **Technological and Organizational Issues**

In the ensuing section we have reviewed and summarized some of the distinguishing market and organizational features characterizing the INV and its surroundings. As mentioned, such factors may be important when attempting to develop new theoretical approaches to the study of these firms.

### *Technological Issues*

Whether INVs are more likely to occur in some industries than others is one of the basic research questions scholars in the field have asked. Arguably, some sectors are more international than others (Keeble et al. 1998; Autio et al. 2000) and indeed findings support that industry factors are related to INV occurrence (Jolly et al. 1992; Boter & Holmquist

1996; Aspelund and Moen 2001). Even though our review suggests that technology intensive sectors of the economy have been given special attention in the research on INVs, there is no indication that the INVs are restricted to these sectors (Crick et al. 2001). An example of the latter, McAuley (1999), finds that INVs represent a considerable portion of firms even in a low technology sector such as the Scottish arts and craft sector.

Several studies do, however, suggest a higher density of INVs in technology intensive industries (Keeble et al. 1998; Jones 1999; Autio et al. 2000). One reason for this is the positive relationship between technology imitability and internationalization (Autio et al. 2000). Firms in fast-moving, technology intensive industries have short time windows of opportunity and seek rapid and broad market penetration to capitalize on their innovation (Boter & Holmquist 1996; Autio et al. 2000). Another reason may be related to competitive moves. Entrepreneurial firms possessing new advanced technology can leverage their advantage of being flexible and fast moving in times of industry shifts to launch innovative, high quality products globally and establish a competitive platform before they meet competition from larger and more resourceful players (Jolly et al. 1992).

Other industry factors that motivate technology intensive firms for rapid internationalization are related to domestic market conditions. Insufficient domestic market size, especially, (Crick & Jones 2000; Madsen et al. 2000; Moen 2002) and domestic competition (Oesterle 1997) appear to be related to the emergence of INVs. Crick & Jones (2000) found that highly technology-oriented entrepreneurs rapidly turned to international markets due to the insufficient size of the domestic market. Another possibility is that the domestic market could for various reasons be hostile towards the new technology and drive new ventures into early internationalization (Oesterle 1997).

As studies of industry factors suggested, technology or knowledge intensive firms are more international than their low-tech counterparts (Keeble et al. 1998). Their focus on technology results in significant competitive advantages in international markets due to uniqueness and superior quality (Jolly et al. 1992; Rennie 1993; Aspelund & Moen 2001). Two features of the INV's competitive profile, in particular, facilitate instant internationalization. Firstly, the firm's core competitive advantage is frequently related to a valuable, often intangible, asset that can easily be transferred across borders (Kotha et al. 2001). Secondly, it may actively use

international sources of innovation and recruit extensively from foreign countries to ensure that its products are globally competitive (Keeble et al. 1998).

### *Organizational Issues*

One of the more interesting patterns that McDougall et al. (1994) found in their seminal work on INVs is related to the path dependence of resource development in INVs. They argued that international entrepreneurs formed INVs instead of domestic ventures due to a fear that domestic resource development would inhibit the organization's ability to create effective international managerial systems at a later stage. This is indeed consistent with Boter & Holmquist (1996) and Kummerle (2002) who conclude that innovative firms, unfettered by deeply rooted, and specialized organizational routines are more likely to internationalize rapidly. The argument is further supported by findings that most organizations that experience rapid internationalization are newly established (Bloodgood et al. 1996; Jones 1999; Aspelund & Moen 2001; Stray et al. 2001), and that initial strategic decisions about resource development will have long term consequences (Moen 2002; Moen & Servais 2002). Scholars in the field seem to agree that an organization's future international involvement is heavily influenced by behavior and decisions made close to the time of its inception.

Another finding worth mentioning in this discussion comes from Preece et al.'s (1999) study of 75 Canadian early-stage technology-based firms. They found that firm age is positively related to global diversity (number of foreign markets), but not to international intensity (foreign sales share). That is, resource strapped new firms might derive significant shares of their sales in international markets, but an organization may benefit from the experience and organizational routines in dealing with the increased complexity associated with presence in a broad range of markets.

The same ambiguity seems to apply to the discussion of initial size. Several studies have addressed the effects of firm size on internationalization (Moen 1999), but the question of whether initial size affects the probability of becoming an INV is not conclusive (Keeble et al. 1998). Most studies we have reviewed argue that the more resources that are put into founding an organization, the more likely it is to become an INV (Bloodgood et al. 1996; Keeble et al. 1998; Preece et al. 1999). On the other hand, other studies argue that size is irrelevant. For example, McAuley (1999) identified several INV micro firms and showed that size is no precondition for global presence.

### *Managerial Attitudes*

The most distinguishing feature of an INV seems to be its strong, international managerial orientation from inception (Jolly et al. 1992; Moen 2002; Moen & Servais 2002). Such attitudes are perhaps even a necessary condition for the establishment of an INV. Of all the firms that are established, only those with internationally oriented founders will become INVs. Even though global presence does come more easily in the 21st century, it doesn't arrive by chance. It requires global strategic intent (Jolly et al. 1992). This aspect will be developed further below.

In conclusion, industry and firms factors must be seen as very important explanatory variables when trying to understand the emergence and growth of INVs. Of apparent particular significance is the founder of the firm and the management team.

### **Founder Characteristics and Team Composition**

According to the “upper echelon” perspective (Hambrick & Mason 1984; Hambrick et al. 1996; Geletkanycz & Hambrick 1997), the management team has a great impact on organizational outcomes. This is especially the case for small and new organizations, as few historical and bureaucratic factors mediate the effect of management's strategic intent on organizational outcomes. Indeed, founders and key decision-makers are found to significantly impact the nature and pace of internationalization (Bloodgood et al. 1996; Preece et al. 1999; Crick & Jones 2000; Crick et al. 2001).

### *Founders and Management Team*

McDougall et al. (1994) found INV entrepreneurs to be individuals that are able to see international business opportunities in the successful combination of resources from different markets. They argue that INV entrepreneurs develop an “alertness” to international business opportunities primarily from previously developed competencies embedded in their network, knowledge, and background. Several other later studies have supported the relationship between founder traits and the tendency to form INVs (Bloodgood et al. 1996; Boter & Holmquist 1996; Coviello & Munro 1997; Crick et al. 2001; Kuemmerle 2002).

In a quantitative study Bloodgood et al. (1996) found international work experience in the management team to be a significant antecedent of new firm internationalization. This is consistent with Kuemmerle's (2002) findings in a qualitative study that pointed to several ways in which international exposure influenced the INV entrepreneurs before and while founding the venture.

The experience of the founder team not only represents a resource in terms of the business and administrative knowledge and capabilities possessed by the members, it also represents a great resource in terms of the social network embedded in the founders and their partners. Coviello & Munro (1997) found that the internationalization process for small software firms is driven, facilitated, and inhibited by a set of formal and informal network relationships. Yeoh's (2000) study also shows this and points to the importance of social networks and personal sources as a means to bridge information gaps. A third example is found in Crick et al.'s (2001) study of minority-owned start-ups. They found evidence that entrepreneurs capitalize on their cultural background and ethnic networks, domestically and abroad, to form INVs.

The way in which the entrepreneurial teams are composed could also affect the international behavior of the new venture. A fine example of that is found in Boter & Holmquist's (1996) case study of Scandinavian international firms. They found that in traditional firms, entrepreneurs made decisions based on a stable circle of family and old friends. INVs on the other hand, often involve highly educated people with an ability to form dynamic teams, including external partners, and operating in a non-bureaucratic manner, thus making the firm better suited for internationalization. In addition, entrepreneurial teams drawing on broad cultural capital from foreign managers (Keeble et al. 1998) or ethnic minorities (Crick et al. 2001) are more likely to experience an early and rapid internationalization. Examining these findings in perspective, we see that founder teams play a vital role in the early stage development of INVs, and greatly impact the strategic choices made in the INV.

### **International Strategy**

International expansion alone is not a sufficient strategy for new firms; it must be supported by other strategies and the firm must be prepared for strategic change (McDougall & Oviatt 1996). It will be a too great task for this paper to encompass the whole range of strategic

dilemmas for managers in INVs. Therefore, we have focused on four main strategic issues, commonly addressed in the literature, namely, niche versus commodity strategies, internationally intense versus globally diverse strategies, market selection, and choice of entry mode.

#### *Niche versus Commodity*

The literature encompasses examples of INVs that target commodity markets (see e.g. Jolly et al. 1992 or Oesterle 1997) and niche markets (see e.g. McAuley 1999 or Crick & Jones 2000), so we must conclude that INVs do not restrict themselves to any of these strategies. However, INVs have at least two innate characteristics that inevitably affect the choice of strategies: Their general resource scarcity and their difficulties with respect to physical global presence. The former causes general vulnerability to competition from larger players, the latter would require resources to build global marketing, sales, and distribution capabilities. For these reasons INVs are often set up to pursue specific market niches (Bloodgood et al. 1996; Keeble et al. 1998) where competition from global players is less intense, but opportunities for profits are significant. Geographical expansion and growth within the niche is required in order to generate profits (Keeble et al. 1998) and competitive advantages (Kuemmerle 2002).

Jolly et al. (1992) and Oesterle (1997) offer examples of INVs that have not pursued a niche strategy. In Jolly et al.'s cases, standardized products launched in lead markets where emphasis was placed on the early launch of second-generation products, made firms into viable global players within a relatively short period of time. However, both studies reported cases in extremely high growth industries in which recent shifts meant that global competition was not yet established. Hence, the anticipated profit potential justified heavy investment in global sales and marketing.

#### *International Intensity versus Global Diversity*

A second major strategic question that INVs face in their early phases is whether they should focus their attention on a few important foreign markets (international intensity) or spread their resources over a broad range of markets (global diversity).

Apparently, a global diversity strategy appears to be more resource demanding than an internationally intensive strategy (Preece et al. 1999). Involvement in many international markets leads to low market specific revenues and low entry mode commitment in each

market (Shrader et al. 2000). Preece et al. also concluded that a global diversity strategy requires a high level of human resources and organizational experience that is not easily obtained by new firms. Indeed, Stray et al. (2001) found a global diversity strategy risky for new firms that tended to "...cast the net too far and wide..." (pp. 27).

Lessons from the literature suggest that many successful INVs rely on a combination of the two strategies. They employ a market-spreading strategy because they actively search for opportunities globally, but they focus their resource commitment on their most important markets (Crick & Jones 2000; Stray et al. 2001). Finally, extremely niche oriented firms may have to enter many markets.

### *Market Selection*

In terms of market selection, scholars in the field don't seem to agree on a common framework. Shrader et al. (2000) argues that foreign market and entry mode decisions are made using an integrated perspective, since managers trade off different types of international risks to reduce the overall risks associated with international expansion. Jolly et al. (1992) found that successful INVs targeted lead markets wherever they were. These two studies advocate the importance of external factors when INVs select foreign markets.

On the other hand, other scholars argue that internal human factors are the key to understanding INVs' initial market selection. A manager's personal network, in particular, appears to be important for market selection and choice of entry mode (Coviello & Munro 1997; Keeble et al. 1998; McAuley 1999). There are multiple examples of how INVs internationalize through nodes in their social network and first market entry is simply selected from where the founders have a gateway. Combining the two views, Crick & Jones (2000) argue that markets are selected for opportunities of growth, but the sequences are decided based on the founders' previous experience and network.

Despite the lack of consensus with respect to the market selection issue, another question seems to enjoy a concurrence, namely that geographical proximity and psychic distance is less important for INVs than for traditional small international firms (Boter & Holmquist 1996; Keeble et al. 1998; Madsen et al. 2000). INVs are less dependent on business in specific regions, because they target specific niche markets rather than geographic regions (Bell 1995; Madsen et al. 2000).

### *Entry Modes*

The choice of entry mode is an important strategic decision that has major consequences for INV performance (Lu & Beamish 2001), but contrary to the discussion on market selection, there appears to be a common understanding among scholars as to how INVs make decisions about this issue. Generally, INVs choose relatively low commitment entry modes whenever they can do so in order to overcome resource constraints and to handle risk (Jolly et al. 1992; McDougall et al. 1994; Coviello & Munro 1997; Burgel & Murray 2000; Crick & Jones 2000; Madsen et al. 2000; Shrader et al. 2000). For these new firms, foreign direct investment (FDI) is in general, not a realistic way into international markets in the early stages (McAuley 1999), even though it seems to be the most competitive strategy (Lu & Beamish 2001). INVs choose FDI as an entry mode only for specialized functions (Jolly et al. 1992). A third reason, to choose low commitment modes is the shorter time lag to positive cash flow (Lu & Beamish 2001) and the possibility for a broad and rapid market penetration through partnering (Jolly et al. 1992; Bell 1995). Nevertheless, INVs must also be able to meet customer demands for implementation, with for example, after sale service, which in many cases requires higher commitment modes. Therefore, INVs choose entry modes based on their available resources as well as on the local specific demands for customization, support, etc. (Burgel & Murray 2000; Crick & Jones 2000).

The most evident disadvantage resulting from a low commitment strategy is perhaps the reduced learning which is often a consequence of using partners that are responsible for the direct contact with foreign customers. High commitment entry modes such as green field start-ups and acquisitions contribute more to learning than low commitment entry modes such as exporting and licensing (Zahra et al. 2000). In the long run, low commitment modes can inhibit further international development and profitability. We will discuss the relationship between entry modes and performance in more detail in the following section.

### **Performance**

As we have already discussed in the section on resource development, long-term international performance depends on strategic choices in the early phases of the life of a firm. However, the question of whether an instant, rapid internationalization strategy pays off remains to be

answered. In the following section we have summarized some of the findings on early, rapid internationalization and firm performance.

### *INVs and Firm Performance*

Most studies reviewed suggested that there is a positive relationship between being an INV and performance. In terms of growth, both Keeble et al. (1998) and Jolly et al. (1992) noted that international firms exhibit higher growth rates than do domestic firms. Bloodgood et al. (1996) concluded that early internationalization is positively associated with profits and Autio et al. (2000) found that early internationalizing firms have a higher international sales share, and more substantial growth in international sales and total sales than is the case for their later internationalizing counterparts. This is consistent with Stray et al. (2001) and Madsen et al.'s (2000) conclusion that younger firms internationalize sooner than older firms and very rapidly reach high export intensity. Autio et al. (2000) also found that rapidly internationalizing firms outperform their slower counterparts. Furthermore, INVs may have other performance antecedents than other international firms (Aspelund & Moen 2001). While INVs in their study increased performance with technology advantages, niche focus, and international customer orientation, older firms benefited from market advantages and product quality.

McDougall & Oviatt (1996) studied the relationship between internationalization and profitability in-depth. They argue that internationalization is only profitable for organizations that are capable of strategic change. Along the same lines, Zahra et al. (2000) found a positive relationship between international expansion, technology learning, and performance. They found a direct relationship between international expansion and performance, but this relationship is further strengthened by the organizational capability of absorbing new knowledge from international activities. Lu & Beamish (2001) also investigated the INV - performance relationship. They demonstrate a "sideways S-curve" on the relationship between internationalization and performance. Performance declines in initial stages to overcome resource constraints, but the relationship turns positive as international resources are developed and exploited. The performance effect decreases again for truly global companies, perhaps due to increased complexity.

### ***Theoretical Implications and Suggestions for Further Research***

In this section, the first issue in focus is the formulation of theories and models, the second issue is the long-term development pattern among INVs, third, the strategies and performance antecedents of INVs are presented, and finally, the issues of definition and operationalization are discussed.

#### **The development of general models and theories**

The literature review revealed a rather broad concurrence regarding the forces driving the occurrence of the INV phenomenon. Scholars from both research traditions (internationalization processes of firms as well as international entrepreneurship) point to a common set of internal (more internationally alert and experienced entrepreneurs, specialized product competencies, etc.) and external (easy and inexpensive communication as well as transportation solutions, more global demand conditions, etc.) factors that have given rise to the increasing numbers of INVs.

These factors, however, are relevant for all organizations, not only new firms. We therefore argue that the process of internationalization must be viewed with fresh eyes. Many of the traditional obstacles and managerial challenges of internationalization no longer exist for the modern international manager. At least the nature of the challenges has changed. What previously was a managerial art of overcoming information gaps and building experiential knowledge about foreign markets, has now to a large extent, turned into more general question of resource management and strategy, albeit with international or even global focus. As global competition and the numbers of small international firms increase, a manager's challenge is the effective and efficient coordination of resources to meet fierce competition and customer demands in multiple markets, in the case of INVs often with scarce human and financial resources.

So, we contend that our review has theoretical implications for future research, namely that efforts should not attempt to formulate theories or models relating to the specific phenomenon of INVs, but to internationalization processes of firms in general. Entrepreneurial action may occur in new organizations, but also in existing organizations leading them to accelerated internationalization or to becoming the type of firms called 'Born-Again-Globals' (Bell et al. 2001). The changing environmental conditions offer a variety of opportunities to all firms, but

may be exploited quite differently depending on the extent and nature of actual entrepreneurial skills. The concepts of variation, selection, and retention offered by evolutionary economics may prove to be relevant theoretical constructs, applicable in future research in the attempt to analyze which firms will survive and generate earnings in present and future market conditions.

The issue of the much greater variation among international firms is also reflected in the research reported in this article. Several studies suggest that seemingly homogenous firms can effectuate a broad range of international strategies. The actual path of internationalization chosen by a firm may be a deliberate and quick strategic decision made on the basis of available resources and the nature of the product, rather than a linear process slowed down by incremental decision making due to uncertainty avoidance, gradual acquisition of experiential market knowledge, etc., as proposed by traditional internationalization theory. We therefore suggest building more general theories to explain the internationalization of the firm. Moreover, the great heterogeneity found in empirical research suggests that internationalization processes might be understood better from an effectuation perspective than a causation perspective (Sarasvathy 2001). An effectuation perspective might serve well to add further understanding as to why initial stages effect long-term outcomes and the international strategic path of INVs so strongly and hence why the empirical studies reflect high variation among INVs with respect to strategic choices, growth, etc.

### **The long term development pattern of International New Ventures**

In line with the arguments above, Moen (2002, p. 193) states that *“In developing our knowledge of small firms’ internationalization, the decisions taken prior, under and shortly after establishment may be more important than has been suggested in the internationalization process models”*. As a consequence, longitudinal research designs would be of outmost importance, enhancing our understanding of internationalization processes. The increasing number of firms which may be classified as INVs is well documented by research conducted throughout the last decade. However, there remains a lack of knowledge as to how these firms develop, grow, and perform economically over time, and little is known about survival rates viewed over a lengthier time perspective. Such issues should be addressed in future empirical studies of INVs, but also in research settings where INVs are compared with

newly established firms that do not engage in international markets at all (or only to a limited extend).

Scholars have investigated the INV phenomenon from a broad range of theoretical and conceptual stances as well as methodological approaches, as we have demonstrated through this review. This is an advantage and reflects an interest on behalf of researchers from many research traditions. This has contributed to a broad and valuable body of knowledge that could not have been created by one scholarly or methodological strand. Being that INVs are a new phenomenon, it has been beneficial that these firms have been investigated by scholars representing both a theoretical and methodological diversity. We encourage other scholars from fields outside international marketing and entrepreneurship to take a closer look at INVs. INV subgroups may, at the very least, represent truly distinguished organizations with extreme features in terms of their organizational form, creativity, and flexibility. As such they should be interesting for researchers in the fields of economics, organizational behavior, and international business in general. Through the combined efforts of researchers from different research traditions, it should be possible to develop knowledge about the establishment, the long-term growth, survival, and performance of these firms.

### **International New Ventures: Strategies and performance antecedents**

In order for the findings to be relevant for managers, research should attempt to identify successful strategies in international markets. As presented in the review, many INVs do follow a niche focus strategy combined with the use of low commitment entry modes. Except for that, research does not offer much advice with respect to important issues such as market selection, entry modes, or the development of distribution systems under considerable resource constraints.

With regard to market selection, several studies suggest that INVs target lead markets (Jolly et al. (1992) and are more focused on customer niches than geographical factors (Keeble et al. (1998). Psychic distance, or the sum of factors that factors that inhibit free flow of information between markets (Johanson & Vahlne 1977) has for many years been a central variable in the study of the internationalization processes of firms (Stöttinger & Schlegelmilch 1998). Even though INVs seem less hampered by these obstacles, there is still the open question of how they are able to bridge gaps of foreign culture, language, business practice,

legal matters, human and public relations, etc. We suggest more research on these issues. Though many markets are more or less global, a great degree of heterogeneity remains in the way business is conducted throughout the world.

Oviatt and McDougall (1994, pp.53-55) viewed the INV as an organization that controls, but not necessarily owns assets, due to its scarce resources. Instead such firms may have to protect themselves against the risk of opportunism by means of alternative governance structures, such as networks based on informal social control mechanisms like trust. Oviatt and McDougall call for research attempting to “... *understand the differential success of these mechanisms more completely*” (p. 60). Unfortunately, this call has not really been heeded, despite the fact that empirical research has demonstrated that low commitment entry modes are very commonplace among INVs. This is especially true in the case of complex products integrated with customer production processes, possibly inclusive of extensive support and service. In this instance it may be very important for INVs to search for and find good international partners, paying close attention to their competencies, solidity, and ability to generate sales. In further research, both entry strategies and governance structures when establishing distribution systems should be given increased attention.

Generally, it is important to develop our knowledge of the strategies and actions made by INVs, and their impact on performance. This could be accomplished by focusing exclusively on INVs, but also through research designs making it possible to compare INVs with other groups of firms.

### **Definition and Operationalization of the Phenomenon**

The lack of consistency among empirical findings leads to serious questions regarding the definition and operationalization of the phenomenon in future research. As mentioned there is certainly no concurrence in the literature about the definition of an INV. The variety of operational delineations in empirical research has been demonstrated as well. As a consequence the firms studied under the label of INVs are highly varied, ranging from a small Danish food manufacturer focusing on the neighboring markets in Northern Europe to a much larger US based electronics firm with subsidiaries in several continents. Clearly, it is difficult to identify similarities between firms of such great dissimilarity. The former firm may be quite similar to a traditional exporter, even though it became international at a juncture very

close to its inception. The latter type of firm may have a much higher potential for representing a genuinely new form of organization. We therefore propose that future empirical research adopt a more narrow and precise definition of the INV phenomenon, the idea being to isolate INVs that represent a challenge to more general theories rather than just traditional internationalization models. The empirical investigation of such firms may provide theoretical contributions of a more general nature because they potentially represent new form of organizing business activities.

### **Concluding Remarks**

As mentioned in the introductory section, the article published by Oviatt and McDougall in the Journal of International Business Studies in 1994 is an often-cited first attempt to integrate the literature on entrepreneurship and international business with the purpose of analyzing the phenomenon of INVs. We therefore conclude this review with an assessment of the development over the past ten years with respect to some central issues raised in that article.

Oviatt and Mc Dougall (p. 47) noted that the phenomenon of INVs had largely been ignored in the academic literature at that time. They attempted to “.. *describe and define the phenomenon ..*”, *hoping that “.. a well-delineated, theoretical framework will unify, stimulate, and guide research in the area.”* (p.48). Having reviewed a great number of articles we must conclude that the INV phenomenon is certainly no longer ignored in the literature. Furthermore, the definition proposed by Oviatt and McDougall has stimulated many researchers, but unfortunately it has not guided them into a unified empirical delineation of the phenomenon. We call for rigorous empirical operationalizations of the phenomenon such that real comparisons between studies are possible.

Oviatt and McDougall (pp. 57-60) noted that INVs manifest themselves in many ways. Some coordinate resources from many countries whereas others are primarily exporters. Therefore, they proposed to distinguish different types of INVs, depending on the number of activities they coordinate in the value chain and based on the number of countries in which they are operating. Of the resulting four INV-types, the Global Start-ups are “.. *the most radical manifestation of the INV because it derives significant competitive advantage from extensive coordination among multiple organizational activities, the location of which are geographically unlimited*” (p. 59). Unfortunately, empirical research over the past ten years

has not attempted to distinguish between such different types of INVs. We call for empirical research that includes such relevant distinctions between different INV-types. In fact, we do not even know very much about the prevalence of INVs in general since most empirical studies are based on judgmental samples and therefore have low degree of generalizability (see also Coviello and Jones, 2003). We call for large scale survey studies based on random sampling.

In fact, most of the empirical work that has been reported during the past decade is descriptive rather than theoretically oriented. We call for research that is firmly rooted in theory along the lines proposed in the previous section as well as by Oviatt and McDougall.

In conclusion, there seems to be plenty of room for empirical as well as theoretical improvements in the research on INVs.

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Paper 2

Small International Firms:  
- Typology, Performance and Implications

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Forthcoming in Management International Review

# **Small International Firms: - Typology, Performance and Implications**

## ***Abstract***

The remarkable increase in heterogeneity among international firms in the past decade constitutes a challenge to traditional thinking about the internationalization process of firms. This paper contributes to the literature by offering a typology of small and medium-sized international firms defined by the rapidity and extent of their internationalization. The firms are compared on competitive profile, international motivation, behavior, and performance. Implications for managers, scholars and policy-makers are also discussed.

## Key Results:

Small and medium-sized international firms naturally falls into three categories; namely *Born Globals*, *Early Internationals*, and *Late Internationals*. The firms are clearly distinct in terms of international motivation and behavior, but differs less in terms of performance.

## **Introduction**

Stage models and incremental internationalization of established firms has been the reigning paradigm in international marketing research for the last decades of the 20th century.

However, the emergence of new types of small international firms has been given considerable attention more recently. One example of such firms is the emergence of a group of rapidly-internationalizing firms, labeled "*International New Ventures*" (McDougall/Shane/Oviatt 1994) or "*Born Global*" firms (Rennie 1993, Knight 1997, Aspelund/Moen 2001, Moen 2002). *Born Global* firms are firms that seek internationalization from inception and derive a considerable portion of total sales from foreign markets in their first years of operation (Rennie 1993, Knight 1997). Traditionally seen only as an obscurity, there is a strong evidence for their prevalence (McDougall/Shane/Oviatt 1994, Bell 1995, Madsen/Servais 1997) and increasing numbers in the last decade (Preece/Miles/Baetz 1999, Aspelund/Moen 2001, Moen 2002).

Even though several studies have shown that new international firms have features distinguishing them from other types of exporters (Jolly/Alahutha/Jeannet 1992, Rennie 1993, Boter/Holmquist 1996, Madsen/Rasmussen/Servais 2000, Aspelund/Moen 2001, Stray/Bridgewater/Murray 2001, Moen 2002) the results are hard to compare, as there has been no attempts to establish a rigid typology of such small international firms. Although it was the promising growth prospects of *Born Global* firms that caught the initial interest of scholars in the field (Rennie 1993), no research has unveiled the long term performance of *Born Globals* and the longitudinal effects of rapid and extensive internationalization strategies remain relatively unexplored.

This study seeks to cover these gaps in the literature. It offers a typology of small and medium-sized international firms in terms of their speed and level of internationalization. By examining the example of Norwegian small and medium-sized international firms, we seek to unveil the key distinguishing features of this type of small international firms in terms of the future prospects of their international activities and longitudinal performance. The results of our analysis form the basis for implications and suggestions for practitioners, policy makers and scholars in the field of small firm internationalization.

### **Contextual Background**

From the late 1960's up until recently, the so-called "stage models" represented the contemporary paradigm in the research field of firm internationalization. The "stage models" are commonly divided into two slightly different strands (Andersen 1993), namely the Swedish *Uppsala Internationalization* model (see e.g. Johanson/Wiedersheim-Paul 1975, Johanson/Vahlne 1977, 1990) and the American Innovation-Related Internationalization models (see e.g. Simmonds/Smith 1968, Bilkey/Tesar 1978, Cavusgil 1980, Reid 1981).

The two models are similar in the way they depict the international development of the firm. In the purest sense, both models see the internationalization process as a slow and incremental process where the firm increases its international activities like "rings in the water" (Madsen/Servais 1997). Stage models see psychic distance and lack of experiential knowledge as the dominant barrier to new market entry. Therefore, the rationale of the expanding firm is to initiate export to near markets using low commitment entry modes and incrementally increase commitment and activities to progressively distant markets (Johanson/Vahlne 1977).

The *Uppsala* and *Innovation-Related* models also share the view that internationalization is a process that occurs in firms that already possess extensive experiential market knowledge gained from domestic activities. However, the two sets of models differ significantly on the events that trigger international expansion. Actually in the Swedish model, Johanson and Wiedersheim-Paul (1975) explicitly stated that their model did not aim to explain why the firm would start exporting (pp 306). Johanson and Vahlne (1977) attributed the desire to internationalize to the general need for growth in order to survive in the longer run. In contrast, the Innovation model deals quite thoroughly with the initiating phases. Bilkey and Tesar (1978) emphasized the importance of external agents for the firm to initiate exporting. They found unsolicited orders to be the most common triggering event in initiating export sales. Other studies emphasize the role of the internal change agent (Cavusgil 1980). In an earlier study by Simmonds and Smith (1968), the role of international entrepreneurs was put forward for the first time. They found an individual within the firm to be the triggering factor and described him in very similar terms as in later studies (see e.g. McDougall/Shane/Oviatt 1994) have described the international entrepreneur.

According to the stage-models' perspective, policy-making and managerial decisions are fairly uncomplicated. These models are linear and deterministic and the obstacles to their progress are very well defined. The manager's role is to guide the firm through the incremental process and leverage the firm's existing market knowledge and commitment for further internationalization. Their advice and implications for governmental export promotion programs are equally simple: one should target firms that have grown mature in domestic markets, but still have an unrealized potential abroad, and help them to bridge the market knowledge gap.

As *Born Global* firms enter the international arena the neat picture gets increasingly complicated. What has attracted the academic interest in those firms is the fact that they tend to internationalize in a manner that contradicts previous theoretical models (McDougall/Shane/Oviatt 1994, Oviatt/McDougall 1994, Knight/Cavusgil 1996, Madsen/Servais 1997). As slow and incremental internationalization by mature companies has been the paradigm in earlier internationalization models (Johanson/Wiedersheim-Paul 1975, Johanson/Vahlne 1977, Cavusgil 1980, Johanson/Vahlne 1990), rapid and nearly instant internationalization of new firms constitutes the core of the *Born Global* phenomenon, which requires a new frame of reference.

Some causes for the rapid emergence of *Born Global* firms can be attributed to changes in the global economy. Advances in communication technology have made international market information more readily available and market interaction have become easier than in the past (Knight/Cavusgil 1996). Access to managers with international experience and business networks has increased (Madsen/Servais 1997). Advances in process technology and improvements in general welfare have increased the number of niche markets and the demand for specialized goods (Knight/Cavusgil 1996). Perhaps equally important is the internationalization of facilitating institutions and industrial networks, which have contributed to the smooth internationalization progress (Bell/McNaughton/Young 2001).

When these external aspects taken into account, we can easily see that traditional barriers presumed to have governed the whole internationalization process only two to three decades ago have been significantly reduced or even practically nullified. Actually, several recent studies have assessed the international development of firms and concluded that variables such as experiential knowledge (Burgel/Murray 2000) and entry mode commitment

(Madsen/Rasmussen/Servais 2000) explain little of small firm internationalization patterns, and the validity of incremental internationalization has been questioned severely (McDougall/Shane/Oviatt 1994, Bell 1995, Jones 1999, McAuley 1999, Moen/Servais 2002). Based on these findings we would assume that, as the traditional constraints have been lessened, or at least significantly changed, the internationalization pattern of emerging firms are of a different nature than traditional exporting firms in the recent past. Hence,

*H1: The international activities of different types of small international firms, defined in terms of the rapidity and the level of internationalization, will differ significantly.*

The focus on *Born Global* firms was triggered by two studies in the early 90's that described these firms as extremely competitive, rapid growing firms with substantial growth potential (Jolly/Alahutha/Jeannet 1992, Rennie 1993). Later, other studies have also emphasized the promising growth and performance aspects of *Born Global* firms (Autio/Sapienza/Almeida 2000, Zahra/Ireland/Hitt 2000, Aspelund/Moen 2001). However, no study has provided a rigid test of whether there is a positive relationship between such early and extensive internationalization and firm performance based on longitudinal data from large samples. Based on the promising findings in earlier studies one would assume that firms that have successfully undertaken a rapid and extensive internationalization process would stand out on firm performance. Hence,

*H2: Different types of small international firms, defined by the rapidity and level of internationalization, will have different levels of performance.*

We seek to test these hypotheses by creating a typology of small international firms by means of a cluster analysis. This typology, allows us to identify the key distinguishing features of *Born Global* firms as compared to other types of exporters; and moreover, to answer the question of whether there are any performance benefits associated with early and extensive internationalization compared to a more confined and incremental internationalization, as envisioned by earlier theories such as the "stage models".

## **Method**

The data stems from a follow-up study of a large survey on Norwegian exporters in 1997. At that time, 1500 exporting, manufacturing SMEs (less than 250 employees) was identified in the COMPASS EUROPE database. They were mailed a 6-page questionnaire with questions regarding their international activities, competitive strengths and performance. The survey yielded 335 usable responses, which represented a response rate of 23,2 percent. The respondents were predominantly managing directors or export managers.

Here, the 335 firms from the 1997-study were included for a follow-up study. We collected information about financial performance and survival during the period from 1997 to 2000. The firms were identified by cross-examining our 1997 database with both the Norwegian National Register of Business Enterprises and The Dunn and Bradstreet Business Database. The latter two were used to assess survival and financial records, respectively. In this process, 47 cases were deleted from the sample due to non-exclusive identification in any of the three databases. An additional five were deleted because they were merely local sales branches of foreign companies, which left 283 cases for the study. A comparison of deleted cases revealed no signs of bias.

The study follows a typical cluster analysis framework as suggested by Hair et al. (1998). Hence, the procedure is as follows: First, we will describe the total sample, allow the analysis to partition the sample into appropriate clusters, and finally compare the clusters on the variables in question. For the comparison, we employ a one-way ANOVA with Bonferroni tests to investigate in both variance and mean values differences between the clusters. In case of nominal variables, we test the relationships by means of the chi-square test.

## **Sample Characteristics**

Table 1 gives a description of the total sample and we can see that there is great heterogeneity in the sample. *Firm Age* varies from 108 to one year at the time of the first data collection in 1997. The age distribution is slightly skewed to the right with an over-representation of younger firms.

**Table 1: Sample Characteristics**

	Minimum	Median	Maximum	Mean	Std. Dev.	N
Year of Establishment.	1814	1970	1996	1959,9	33,2	275
NACE <sup>1</sup> Business Sector	50200	290000	900000	355219	184724	243
Share of Foreign Sales	0	33,3	100,0	40,8	31,1	258
Number of Foreign Markets	0	6	80,0	10,6	12,2	276
Employees 1997	1	25	240	43	48	272
Turn Over 1997 <sup>2</sup>	,5	33	945,0	61,2	103,7	270

<sup>1</sup> EU's NACE standard (see [http://europa.eu.int/comm/competition/mergers/cases/index/nace\\_all.html](http://europa.eu.int/comm/competition/mergers/cases/index/nace_all.html))

<sup>2</sup> Numbers in NOK (7 NOK  $\approx$  1 €)

The sample is also truly cross-sectional with a nearly uniform distribution from all the sector codes in the NACE standard representing firms from agriculture to high-technology. Share of *Foreign Sales* varies from zero to 100 percent with a mean value of 40, and the firms in the sample do business in 10 – 11 foreign markets on average. Two companies reported no foreign sales (and no foreign markets). This might be because we asked for foreign sales in one specific year (1997). Since both firms were classified as exporting firms in the COMPASS database, we decided to keep them in the sample. In terms of size, the sample consists of predominantly small companies where 50 percent of the companies have 25 employees or less.

## Variables

Most of the variables in the study are measured by single items in the questionnaire. We have used four types of variables, namely natural scales (where the output is a number, e.g. year of establishment), nominal categories (where any expected response can be categorized into a limited number of outcomes, e.g. entry modes), Likert scales, and composite indices. The Likert scales were constructed to enable the respondent grade his/hers agreement with a statement in the questionnaire on a scale from 1 – strongly disagreeing with the statement, to 7 – strongly agreeing with the statement. We used composite indices where we wanted to measure complex social or strategic constructs (see table A in the Appendix for indices in this study).

The defining variables, *Share of Foreign Sales* and *Time to Internationalization*, were operationalized by simple items in the questionnaire; namely, by foreign sales as the

percentage of total sales in 1997 and the elapsed time span between the firm's establishment and the fulfillment of the first export order.

In terms of the firms' international activities, we investigated four basic features, namely international motivation, number of foreign markets, market selection, and entry mode(s). The first is based on ten single items on the firm's initial motivation for international expansion. The market selection and entry mode variables are based on the firm's most important foreign market and the chosen entry mode in that specific market.

On competitive advantage and strategy dimensions, we measured the firm's behavior on five composite scales. Competitive advantages were measured in terms of market and technology advantage. The scales were based on previous work by Porter (1980), Dess and Davis (1984), and Namiki (1988). The indices on international strategy are based on Knight's (1997) doctoral dissertation on *Born Global* firms. We have used indices labeled *Niche Market Strategy* (5 items), *Differentiation Strategy* (3 items), and *Product and Product Quality Strategy* (3 items). These measures indicate to what extent the firms seek to avoid competition in niche markets, to differentiate themselves from more resourceful competitors, or compete head-to-head on the basis of their products and service features, respectively.

In terms of performance we have followed the recommendation of Murphy, Trailer and Hill (1996) to measure performance in several dimensions. Two of them are subjective, *Perceived Growth Likelihood* and *Perceived International Performance*. The first is based on a single item in the questionnaire. The second is a 5-item index adopted from Knight (1997). From the D&B database we have retrieved additional information on growth in employment and turn over, return on investments, and return on equity.

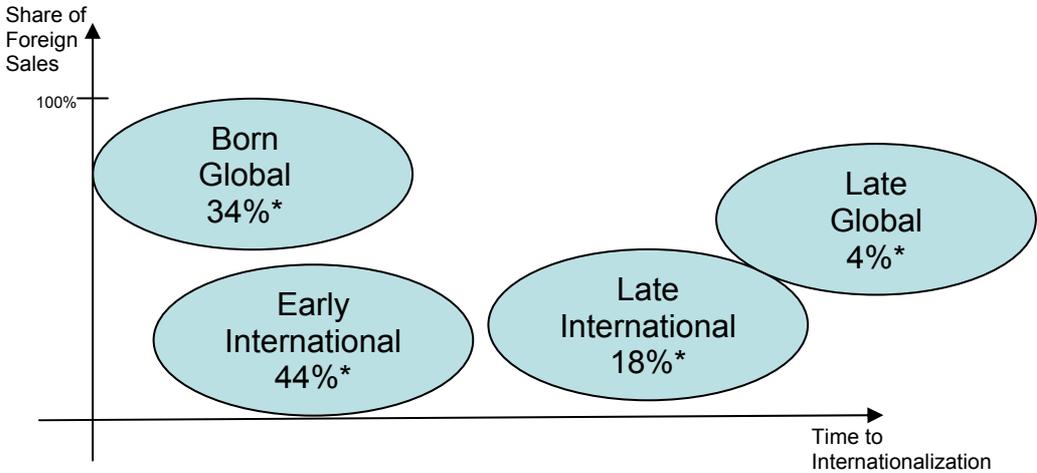
### **Cluster Analysis**

We clustered the sample from the two defining features of *Born Global* firms, namely the rapidity and degree of internationalization. To assign cases into their proper cluster we used the K-Means cluster method. This method partitions the data into a desired number of mutually exclusive clusters by the means of an iterative algorithm. The algorithm treats each case as an object with a position in space, defined in terms of certain predefined dimensions, and finds a partition in which cases in each cluster are as close to each other as possible and as

far from other clusters as possible at the same time. The result is a set of clusters that are as compact and well-separated as the sample allows.

The use of two defining dimensions leads to four natural groupings, or clusters. Actually, the K-Means algorithm returned four clusters as shown in Figure 1 and presented in Table 2. In terms of the defining dimensions, an F-test shows that the clusters are significantly different on both *Share of Foreign Sales* and *Time to Internationalization* on the 0.001 level.

**Figure 1: Clusters of Small International Firms**



\*Percentage that falls into this category from the total sample

**Table 2: Cluster Centers**

	<u>Born Global</u>	<u>Early International</u>	<u>Late International</u>	<u>Late Global</u>
Share of Foreign Sales	78	18	23	60
Time to Internationalization	4.5	7.0	43.0	89.6
Number of Cases	82	106	43	9

Figure 1 shows the relative position of the clusters in the two dimensions and the coordinates of the cluster centers are given in Table 2. As we can see, there are few cases in the *Late Global* cluster. This cluster is intriguing for at least two reasons. First, its small size might partly be a result of the exclusion of large firms. Second, it might partly be due to inertia: i.e., firms with the initial aim of serving a narrowly-defined geographical market tend to remain so as they grow old (McDougall/Shane/Oviatt 1994). As this group represents a small partition

of this sample (only about 4 percent), only the *Born Global*, *Early International*, and *Late International* clusters will be treated further in the analysis.

### **Comparative Analysis of Clusters**

*General Characteristics.* As shown in Table 3, there are some differences between the clusters in terms of firm characteristics. On average, the *Late International* firms are slightly older than the other two clusters. It should be noted that also the *Born Global* and *Early International* clusters consist of many old firms. Actually, the oldest *Born Global* firm in our sample was established in 1874. The early internationalizing firms are not restricted to a certain sector as there is no indication of dissimilar distributions in terms of business sector for any of the clusters. There are also few differences in firm size; even though *Late International* firms tend to be slightly larger than the earlier internationalizing firms.

It should be noted that there should be large differences in international expansion patterns among the clusters by definition. The results in Table 3 show that *Born Global* firms operate in more foreign markets than their less internationally-intensive counterparts. This means that the *Born Global* firms employ a market spread strategy by operating in many markets and attracting only relatively low sales percentages from most of them.

**Table 3: Characteristics of the Clusters**

		<b>Min</b>	<b>Median</b>	<b>Max</b>	<b>Mean</b>	<b>St. Dev.</b>	<b>F-Value</b>
Year of Establishment	<u>Born Global</u>	1874	1982	1996	1968	29,4	41,418***
	<u>Early</u>	1850	1980	1996	1974	20,2	
	<u>International</u>						
	<u>Late</u>	1850	1937	1967	1934	24,1	
NACE Business Sector	<u>Born Global</u>	50200	292345	748000	352954	170317	,975
	<u>Early</u>	112000	290000	900000	366473	200928	
	<u>International</u>						
	<u>Late</u>	141100	286300	853290	318048	148642	
Employees 1997	<u>Born Global</u>	2	20	200	41	50,1	4,032**
	<u>Early</u>	1	23	240	39	46,4	
	<u>International</u>						
	<u>Late</u>	4	42	220	64	57,5	
Turn Over (NOK in 1997)	<u>Born Global</u>	1,5	71,9	880,0	71,9	123,0	2,377*
	<u>Early</u>	,5	23,9	584,0	45,9	72,0	
	<u>International</u>						
	<u>Late</u>	7,9	50,0	945,0	83,7	146,5	
Number of Foreign Markets	<u>Born Global</u>	1	13	80	18,8	16,9	29,506***
	<u>Early</u>	0	4	50	6,5	7,9	
	<u>International</u>						
	<u>Late</u>	1	5	20	6,8	4,9	
Share of Foreign Sales	<u>Born Global</u>	48	80	100	77,5	16,6	409,09***
	<u>Early</u>	0	15	45	18,5	12,9	
	<u>International</u>						
	<u>Late</u>	0	19	51	22,6	15,3	
Time to Internationalization	<u>Born Global</u>	0	1	28	4,3	7,0	309,83***
	<u>Early</u>	0	5	25	7,0	6,8	
	<u>International</u>						
	<u>Late</u>	26	38	83	43,0	14,8	
	<u>International</u>						

\* P < 0.1; \*\* P < 0.05; \*\*\* P < 0.001

*International Motivation.* As we expected, there are large variations in motivation for establishing international presence among the clusters. There is little doubt from our analysis

that the rapidity and the extent of internationalization of small firms are highly related to the type of strategic motivation for the expansion.

**Table 4: Comparison of Motivation for Internationalization**

Export Motives	Mean Values			ANOVA
	<u>Born Global</u>	<u>Early International</u>	<u>Late International</u>	F-value
Necessity for Survival	6,08 <sup>2,3</sup>	3,98 <sup>1</sup>	4,09 <sup>1</sup>	33,734***
Too Small Domestic Market	5,28 <sup>2,3</sup>	4,20 <sup>1</sup>	4,30 <sup>1</sup>	5,372**
General Expansion Strategy	5,08 <sup>2,3</sup>	4,37 <sup>1</sup>	4,37 <sup>1</sup>	17,083***
Opportunities for Profit	5,82 <sup>2,3</sup>	4,83 <sup>1</sup>	5,23 <sup>1</sup>	2,536*
Free Excess Capacity	3,06	3,62	3,65	3,573**
Domestic Market Stagnation	2,44 <sup>3</sup>	2,94	3,23 <sup>1</sup>	7,247***
Reduce Dependence on Domestic Market	4,35 <sup>2</sup>	5,08 <sup>1</sup>	4,90	4,240**
Great Foreign Demand	5,64 <sup>2,3</sup>	4,18 <sup>1</sup>	4,44 <sup>1</sup>	26,894***
Foreign Initiative	4,43 <sup>3</sup>	3,98	3,73 <sup>1</sup>	3,015*
Unsolicited Order	3,70	3,78	3,40	,756
Gov. Encouragement	1,70 <sup>2</sup>	2,28 <sup>1</sup>	2,09	3,883**

\*: p<0.1, \*\*: p<0.05, \*\*\*: p<0.001

1,2,3: denote significant group differences in Bonferroni test

The most apparent observation from the analysis of motivations in Table 4 is that there are no significant differences between the *Late* and *Early International* firms. However, the *Born Global* firms distinguish themselves on all but only two issues. Specifically, *Born Global* firms differentiate themselves by having very high scores on factors related to internationalization as a necessary strategy for survival. *Born Global* firms internationalize to achieve necessary growth and to exploit foreign market opportunities for increased global market share and profits.

Factors related to the domestic market appear to be less important to *Born Global* firm's internationalization than other small firms. Few *Born Global* firms declare domestic market stagnation or reduction of the dependence of this market as a major triggering event for international expansion. However, foreign market factors appear more important to *Born Global* firms than others, as many *Born Globals* attributed their rapid internationalization to great foreign demand and initiative from external actors.

In interpreting this result, we see that necessity appear to be a major motivating factor in *Born Globals'* internationalization. *Born Globals* are pushed into internationalization due to domestic market constraints and the need and desire for growth. However, there is also a pull

effect from attractive foreign market conditions and frequent foreign initiatives. The firms that have internationalized relatively less than the *Born Globals*, have higher scores on some motivational factors, including those related to negative economic trends of the domestic market and intention to lessen the firm's dependence on just one market.

Finally, it is interesting to note the low scores in all groups on the item related to *Government Encouragement*. Very few of the firms reported the encouragement from public export promotion programs to be a significant motivator to initiate export. This finding suggests one of two possible conclusions. Either have these small firms not been in the target group of any export promotion programs, or these promotion programs have had limited success on these firms. Regardless, the low scores are an indication that there are a significant potential for improvements on the design of export promotion programs for small firms.

*Market Selection and Entry Modes*. Examining at the geographical location of the most important export markets we note that the *Early* and *Late International* firms appear to have strongest relations to close markets (see Table 5). In these two clusters the great majority of the firms reported their most important export market to be either a Nordic country or a country in the EU/EEU area. Between these countries there exist few trade restrictions and the psychic distance must be regarded low. For *Born Global* firms, near markets are also important, however, among these firms markets in North America, Asia and countries outside the EU/EEU are more frequently reported as key markets.

**Table 5: Most Important Foreign Market**

	<u>Born Global</u>	<u>Early International</u>	<u>Late International</u>	
Nordic	24,7 %	56,7 %	41,9 %	Pearson
EU/EEU	32,5 %	30,8 %	32,6 %	Chi Square
Other Europe	14,3 %	3,8 %	7,0 %	(14 df)
North America	15,6 %	4,8 %	9,3 %	
Latin America	1,3 %	0 %	2,3 %	
Asia	10,4 %	2,9 %	7,0 %	
Oceania	0 %	1,0 %	0 %	
Africa	1,3 %	0 %	0 %	
<b>Total</b>	<b>100% (N = 77)</b>	<b>100% (N = 104)</b>	<b>100% (N = 43)</b>	<b>31,383**</b>

\*: p<0.1, \*\*: p<0.05, \*\*\*: p<0.001

*Entry Modes.* We also investigated entry modes used by the firms in their most important market. Following the line of thoughts from the stage models, one would expect that *Late International* firms would invest in more resource-intensive entry modes due to their maturity than *Early International* and *Born Global* firms. Furthermore, one would expect *Born Globals* to apply relatively less resource-intensive entry mode strategies in order to have activities in many countries with their generally constrained resources. However, our analysis does not support any conclusion in that direction (see Table 6).

**Table 6: Entry Mode in Most Important Foreign Market**

	<u>Born Global</u>	<u>Early Internationals</u>	<u>Late International</u>	
Direct Sales	40,7 %	41,9 %	46,5 %	Pearson
Agents	50,6 %	41,9 %	41,9 %	Chi Square
Sales Office	4,9 %	8,6 %	7,0 %	(8 df)
Joint Venture	1,2 %	4,8 %	2,3 %	
Other	2,5 %	2,9 %	2,3 %	
<b>Total</b>	<b>100 % (N = 81)</b>	<b>100 % (N =105)</b>	<b>100 % (N =43)</b>	<b>3,978</b>

\*: p<0.1, \*\*: p<0.05, \*\*\*: p<0.001

Interestingly, we find that relatively low resource intensive strategies such as direct sales and foreign agents are by far the preferred entry mode for all groups in our sample. Even though the high rates of low investment entry modes can partially be explained by the limitation of the sample to small firms, it is surprising to see *Direct Sales* and *Foreign Agents* represent more than 80 percent of the chosen entry modes in all the clusters. It is also intriguing to see the similarity in entry mode choices between the clusters. This finding supports the notion that entry modes are choices that firms must make from a strategic viewpoint and is less dependent on the manner with which the firm internationalizes (Burgel/Murray 2000).

*Competitive Profile and International Strategy.* In the question of which competitive advantage the small international firms seek to leverage in international markets, we also found that the *Born Global* firms differentiate themselves from the others as shown in Table 7. *Born Global* firms show stronger market advantage than the *Early International* firms, which might be a result of their presence in more markets. They also appear to compete more on the strength of their technology than the *Late International* firms do. Their differences are also apparent in terms of international market strategy: *Born Globals* are more focused on niche markets and seek to differentiate their products from competing products more than the firms that internationalize on later stages. As compared to the *Early International* firms, *Born Globals* seek to compete on product features and product quality in international markets.

**Table 7: Comparison of Competitive Profile and International Strategy**

Features of Competitive Profile	Mean			ANOVA
	<u>Born Global</u>	<u>Early International</u>	<u>Late International</u>	F-value
Market Advantage	4,65 <sup>2</sup>	4,33 <sup>1</sup>	4,63	4,061**
Technology Advantage	5,07 <sup>3</sup>	4,72	4,37 <sup>1</sup>	5,241**
Niche Market Strategy	4,37 <sup>3</sup>	4,04	3,66 <sup>1</sup>	3,685**
Differentiation Strategy	4,16 <sup>3</sup>	3,97	3,53 <sup>1</sup>	3,866**
Product and Product Quality	6,27 <sup>2</sup>	5,83 <sup>1</sup>	5,94	5,721**

\*: p<0.1, \*\*: p<0.05, \*\*\*: p<0.001

1,2,3: denote significant group differences, Bonferroni test

The results suggest that the *Born Global* firms have a more distinguishable internationalization strategy with stronger competitive advantages and a more focused differentiation strategy than others. They seek to avoid larger competitors by seeking market niches or by differentiation and at the same time deliver high quality products. Overall, this part of the analysis, we see that the clusters differ in all the proposed international activities except for entry modes. Hence, hypothesis 1 is supported strongly.

*Performance.* We have chosen to measure three dimensions of firm performance (see Table 8); namely perceived success, firm growth, and financial returns. The clusters are clearly different in terms of the first measures. The firms that experience internationalization in early phases perceived firm growth far more likely than *Late Internationals* do. There are also large differences in how they perceived the firm's international performance: *Born Global* firms score higher than the other two clusters. Similarly, *Late Internationals* score higher than *Early*

*Internationals*. There might be several reasons for these differences, but we have to keep in mind that the *Born Global* firms in this sample have successfully entered on average 19 foreign markets and all derive more than half of their sales abroad. The findings suggest that firms that have failed to achieve *Born Global* strategy tend to end up in the *Early International* cluster.

**Table 8: Comparison on Firm Performance**

Performance	Mean			ANOVA
	<u>Born Global</u>	<u>Early International</u>	<u>Late International</u>	F-value
Perceived Growth Likelihood	4,84 <sup>3</sup>	4,78 <sup>3</sup>	4,04 <sup>1,2</sup>	4,250**
Perceived International Performance	4,91 <sup>2,3</sup>	3,81 <sup>1,3</sup>	4,26 <sup>1,2</sup>	30,566***
Employment Growth 1997-2000†	,011	,093	,001	1,482
Turn Over Growth 1997 - 2000†	,091	,030	,012	2,652*
Average Annual ROI 1997-2000	,006	,008	,068	1,113
Average Annual ROE 1997-2000	,306	,626	,211	,791

\*: p<0.1, \*\*: p<0.05, \*\*\*: p<0.001

1,2,3: denote significant group differences, Bonferroni test

† Values denote average growth rate per year

The next four measures of performance are based on financial data from the D&B database and they exhibit large variance within each group. Consequently, even considerable differences in mean values between the clusters do not appear statistically significant on the Bonferroni tests. Still the results are interesting. *Employment Growth* is equally distributed among the clusters. However, there are differences in *Turn Over Growth* rates between the clusters. It seems that *Born Global* firms are able to increase turn over, but the increased turn over does not necessarily mean more employees. This might be a result of *Born Global* firms' extensive use of hybrid structures (McDougall/Shane/Oviatt 1994). A consequence of using such structures (e.g., extensive outsourcing) might be that even when activities increase, the resulting employment growth does not occur within the boundaries of the *Born Global* firm.

In order to investigate the high variance on the *Turn Over Growth* variable, we extracted the fastest growing firms in the sample (the firms with more than 15 percent increase in annual sales). Ten out of 12 high growth firms came from the *Born Global* cluster, implying that a few extreme high growth companies can elevate the mean values for the *Born Global* cluster. It is also interesting to note that from an investment point of view there are no significant differences between the clusters. The return on both total investments and equity is equal in all clusters.

In conclusion, although hypothesis 2 has some support in the sample, we neither can accept nor reject it unconditionally. In subjective measures, *Born Global* firms excel, however the objective measures are not reflective of the hypothesis significantly.

### **Discussion**

From the analyses we can conclude that there are clearly distinct categories of international small firms and that they differ greatly in terms of their international motivation and behavior, and perceived international performance. It appears that firms with a different international motivation and competitive profile choose different internationalization patterns. This finding is interesting in itself because it implies that strategic aspects, such as strategic intent and leveraging, are critical to their pattern of internationalization. This finding supports the conclusions of Bell et al. (2001), Jones (1999), Burgel and Murray (2000) and McAuley (1999) that internationalization should be seen from a holistic perspective that incorporates both the firm's strategic assets, strategic intent and the environment.

Given the fact that the data is representative of small international firms in Norway, two findings emerging from the clustering procedure are noteworthy. The first is the low migration of firms from the two "*International*" clusters into the *Late Global* cluster. Only 4 percent of the total sample ended up in the *Late Global* cluster, which is a very low number considering that all the firms in both the "*International*" clusters (62 percent of the total sample) could potentially have turned into *Late Globals*. This finding provides a strong support for the advocates of path dependency in international processes

(McDougall/Shane/Oviatt 1994, Eriksson/Majkgård/Sharma 2000, Moen 2002, Moen/Servais 2002). It appears that early internationalization should be extensive if the strategic intention of the firms is to become a truly global actor in the longer run. The second finding is the sheer number of early internationalizing firms. Of the total sample, 78 percent fell into either the *Born Global* or the *Early International* clusters, which suggests that early internationalization is the strategic norm, not the exception, among these firms.

As the results of the comparative analysis of clusters two findings appear especially intriguing. First, there are differences in international motivation of different types of firms. It seems that the *Born Global* firms only exceptionally internationalize in order to achieve

extreme growth or increased return on assets much higher than normal levels, as only a few excelled on these measures. These results suggest that the factor of necessity plays a far more important role than already recognized. *Born Global* firms are simply forced into globalization because their products and services are so specialized that only global reach secures sufficient markets size to support their activities, if not survival. In contrast, *Early International* and *Late International* firms' internationalization is a supporting strategy to secure themselves against domestic downturns and reduce risk by attaining sales from multiple markets.

Second, *Born Global* firms exhibit definite distinctness in their strategies, intents and behavior. On all the strategic and competitive measures examined in this study the *Born Global* firms distinguished themselves from the others by having a more focused profile. On competitive and strategic measures, these firms are more resolutely focused, and therefore appear more able, than others, to succeed in internationalizing extensively from start-up. One likely interpretation of this finding is that the *Early Internationals* are often "failed" *Born Globals*. Their lack of product strengths and market advantages, combined with their low perceived international performance, supports this interpretation. Hence, the conclusion is that it takes strong technological and market advantages combined with resolute strategic focus in order to succeed with early and extensive internationalization to become a *Born Global* firm.

### ***Implications for Managers***

For small firm managers, there are three aspects of the findings noteworthy. The first is the fact that successful rapid and extensive internationalization is no guarantee for attaining above average growth rates or return on assets. With the exception of a few outliers that exhibit elevated average *Turn Over Growth* rate in the *Born Global* cluster, this study does not find support to suggest that *Born Global* firms excel on objective measures in general. The second lesson regarding *Born Global* strategy is that the firm needs strong competitive advantage both in technology and marketing in addition to an extremely narrow strategic focus in order to succeed with an early and extensive internationalization. This brings us into the final aspect of path dependency. A broad range of studies over the past three decades have shown that turning an established domestic organization into a global actor is a challenging operation (Bilkey/Tesar 1978, Cavusgil 1980, McDougall/Shane/Oviatt 1994, Bell/McNaughton/Young 2001, Moen 2002). In early years the firm establishes organizational routines, external ties

and vital decisions regarding core resource development that creates a strong inertia. If these routines, ties and resources are primarily domestically anchored, an internationalization process will turn into an internal innovation process that might be too resource demanding to overcome. Therefore, if the nature of the business concept is global, or at least international, managers should seek to establish an international vision with internationally compatible procedures, ties and resource development routines from the first days of operation to avoid inertia and reinforce further internationalization.

### ***Implications for Policy Makers***

Most countries with developed, open economies have some sort of export promotion program. The two major questions for policy makers are what types of firms to target, and what resource can be contributed to the targeted firms in order to optimize the outcomes.

Traditionally, export promotion programs have targeted established actors (Bell/McNaughton 2000) with the aim of providing experiential knowledge about foreign markets (Spence 2003). This study shows that international firms are heterogeneous, and hence, export promotion programs should match their diversity to be effective. The high percentage of firm that experienced an early internationalization in this sample (78 percent) suggest that the target group for export promotion programs should include new firms. However, it should be kept in mind that a refocus on new firms will require change in the program contents. New firms differ from established actors in general and constrained resource in particular; and the support programs should help these firms to overcome shortcomings related to the resource gaps by, for example, tying focal firms to international business networks (Spence 2003).

### ***Implications for Scholars and Further Research***

The findings in this study make a contribution to the theoretic discussion on the internationalization process by putting forward and describing types of small international firms and how they differ in their international activities and performance from others. Our analysis suggests that their strategic intent, competitive strengths and strategic focus trigger highly different internationalization patterns, which supports a holistic view of internationalization, comprising both internal and environmental factors. With the systematic reduction of traditional barriers to internationalization due to the increased globalization of the economy in the past decades, we believe new foreign market entry, by any organization, is a function of strategic resources and marketing objectives rather than the organizations' lack

of experiential knowledge and information alone. Therefore, we suggest that further research in the field should be directed towards investigating causal relationships between aspects of the firm's resource profile and successful international moves.

Even though the stage models in their original forms are less suited to explain the internationalization process of the 21<sup>st</sup> century firms, there are still some aspects of the incremental internationalization that deserve our attention in future research. First, it is the path dependency aspect of the internationalization process, which is a major argument in the *Uppsala* model (Eriksson/Majkgård/Sharma 2000). We suggest more research to be directed toward unveiling the true nature of the path dependency with a broader conceptualization of the firms' resource reservoir than experiential knowledge alone.

Furthermore, whether the internationalization process is incremental by nature or not is a question that remains to be answered. Arguably, even though the modern firm does not need "domestic maturation", successive foreign market entries are still chronological. Are *Born Global* and *Early International* firms also stage-wise internationalizations occurring only more rapidly and inhibited by other factors? We also suggest more longitudinal research on the barriers and other inhibiting factors to internationalization, as recent research suggest them to be very different from what traditional theory has posited.

### **Conclusion**

We conclude that the presented typology provides valuable insight in small firm internationalization. The categorization has reveals several distinctions between small international firms both in terms of their international activities and their performance. These features have important implications for scholars, practitioners, and policy makers.

This study identified three significant clusters of small international firms. The *Born Global* firms, defined by their rapid and extensive internationalization, are often forced into internationalization due to an insufficient domestic market and apparent opportunities for growth and profit on foreign markets. *Born Global* firms operate on many markets and even though their most important markets naturally tend to gravitate at least around their own continent, psychic distant markets often constitute their most important. *Born Global* firms have a very distinct market and technology advantage to their international competitors, and

they seek to leverage these advantages through seeking niche markets, differentiation themselves from other competitors and through outperforming competing products with higher quality and better performance. Managers in *Born Global* firms perceive their growth prospects and international performance to be good, however, on objective measures only *Turn Over Growth* appears above average for small international firms. The latter is mainly due to an overrepresentation of a few, very rapidly growing companies in this cluster.

*Early International* firms, here defined by their early but limited internationalization, seek internationalization to reduce the dependency of domestic markets. The process is often initiated by foreign initiatives, but will in most cases limit itself to few and proximate near markets. *Early International* firms often have a strong technology advantage and seek to leverage that advantage through niche market and differentiation strategies. Managers perceive their prospects for growth as high, but their international performance as low. One can categorize these firms as “failed” *Born Globals*, possibly due to lack of competitive strength on marketing capabilities.

The final group, the *Late Internationals*, here defined by their late and limited internationalization, constitutes by older and slightly larger firms. Internationalization is triggered by domestic downturns, and the firms seek a more solid market platform by expanding business into new markets. Trade is restricted to few markets, but they are often fairly distant, at least compared to *Early International* firms. *Late International* firms seek to leverage a market advantage, which they have developed through years of operations. The major competitive strategy is through strong product qualities. These firms have generally low growth prospects and poor perceived international performance.

This study has some limitations that are important to bear in mind. First of all, the sample consists of Norwegian firms only. We know from previous comparison studies that *Born Global* firms are overrepresented in small, open economies such as the Norwegian (Moen/Servais 2002). This characteristic makes the Norwegian economy an excellent case to study these firms; however the magnitude of the occurrence might not travel to other countries. Furthermore, the performance analysis does not comply with the guidelines of Murphy et al. (1996) in terms of control variables. This discrepancy is mainly due to the descriptive nature of this study and we leave the task to perform a rigid performance study of small international firms to future research.

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## Appendix

**Table A: Indices Used in This Study**

	Loading	Cronbach's Alpha
Market Advantage		
Market Management†	,795	
Marketing†	,712	
Service / Training†	,698	
Distribution†	,698	
Financing†	,627	0,74
Technology Advantage		
Uniqueness on technology†	,861	
Unique product features†	,858	
We emphasize the ability to deliver unique product features	,843	
We emphasize the ability to deliver advanced technology	,771	
Product uniqueness is a major export motivation	,761	
Technology†	,726	
Product features†	,646	
We emphasize the ability to deliver customized products	,530	0,89
Niche Market Strategy		
Our export products are unique on technology	,840	
Our products are a new and innovative way to meet demands	,834	
Our products meet demands for special demands	,784	
Our product is highly specialized	,745	
There are many small markets for our products	,581	0,82
Differentiation Strategy		
We seek to differentiate our product through marketing	,812	
We seek innovative approaches in marketing	,779	
Unique on product features†	,684	0,63
Product and Product Quality Strategy		
Product features and performance meet customer demands	,867	
Service and support meet customer demands	,798	
Product quality†	,683	0,65
Perceived International Performance		
We consider the total outcome of the export a success	,823	
We are content with our achieved international market share	,797	
Sales development on international markets†	,761	
We are content with profitability on international markets	,719	
We have fully exploited the international market potential	,490	0,77

† Questions asked in the manner: "How would you compare your company compared to your competitors on international markets regarding..."

Paper 3

Initial Resources' Influence on New Venture Survival:  
A Longitudinal Study of New Technology-Based Firms

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# **Initial Resources' Influence on New Venture Survival: A Longitudinal Study of New Technology-Based Firms**

## ***Abstract***

The emergence of new technology-based firms broadly and positively effects economic development. However, new organizations in general and new technology-based firms in particular, suffer from a “liability of newness”, and most emerging technology firms struggle to survive the first years of operations. The purpose of this study is to investigate to what extent the resources controlled by the entrepreneurs at the firm’s inception affect the new organization’s ability to survive the first years. Based on longitudinal data from 80 Norwegian and Swedish technology-based start-ups we seek to investigate whether resources embedded in the entrepreneurial team and the technology they intend to take to the market, affect the new organization’s ability to survive. The results support the study’s main hypothesis that initial resources do indeed affect a firm’s ability to survive its adolescence. Heterogeneity in the functional experience of the founding team, and technology with a degree of radicalness, are especially prone to reduce the likelihood of firm failure. The results emphasize the importance of properly managing internal resources in the commercialization process, and intimate a path dependency a propos resource development in new technology-based firms. Implications for managers, policy-makers and further research are discussed.

Acknowledgements: The authors would like to thank the Norwegian research Council and the Research Program P2005-POP for economic founding and support of the study. We are also grateful to Professor Sigmund Waagø and the Center for Entrepreneurship and Innovation at the Norwegian University of Science and Technology for access to the data used in this study and for a long and valuable cooperation.

## ***Introduction***

The emergence of new, technology-based firms (NTBFs) initiates a broad range of positive effects in economic development (Schumpeter 1934; Drucker 1985; Teece 1986; Griliches 1990; Roberts 1991; Autio 1994; 1997). Research indicates however, that the probability of survival is rather limited for new organizations in general (Freeman et al. 1983), and for technology-based firms in particular (Nesheim 1997). Stinchcombe (1965) labeled this phenomenon the “liability of newness,” and argued that new organizations’ general resource poverty, lack of legitimacy, and weak ties to external actors provide them with reduced capacity when competing with established players. This liability of newness is even greater for technology-based new firms, as they, in addition to the factors above, often need to fill considerable resource needs in terms of technology development prior to market introduction.

Though environmental influence on organization survival is well documented (Hannan and Freeman 1977; Aldrich 1979; Freeman et al. 1983; Sandberg and Hofer 1987; Cooper 1993; Gartner et al. 1998), recent studies have shown that successful management of internal resources can significantly improve venture performance and the likelihood of survival (Bamford et al. 1999; Hambrick and Mason 1984; Boeker 1989; Smith et al. 1994; Hambrick et al. 1996; Shephard et al. 2000). This is especially true for new organizations in emerging, fast-moving industries (Virany and Tushman 1986; Kamm et al. 1990; Birley and Stockley 2000). Initial resource management decisions, in particular, appear to be of special significance, as these decisions stick with the organization in the long run (Boeker 1988; 1989; Gersick 1991; McDougall et al. 1994).

Despite the existence of a considerable number of studies investigating new venture survival, research has rarely been able to examine the impact of initial organizational and environmental conditions upon new venture performance at the firm level (Bamford et al. 1999). Most research on new ventures has been hampered by the lack of longitudinal data and the inability to measure initial start-up conditions and management decisions, at or very near the point of inception (Bamford et al. 1999). This study aims to contribute to ongoing research as it deals with the resources controlled by the entrepreneurial teams at the juncture of firm institutionalization, and investigates their influence in a longitudinal setting. In particular, we investigate whether some of the initial resources embedded in the technology and the

entrepreneurial team contribute to an increased probability of survival for technology-based start-ups in the long run.

### ***Theoretical Framework***

In recent years, several scholars have made a case for the appropriateness of the resource-based view (RBV) in understanding entrepreneurial processes (Rotefoss 2001; Dollinger 1999) and new firm strategic behavior (Brush, Green et al. 2001; Lichtenstein and Brush 2001). According to RBV scholars, the firm can be conceptualized as a bundle of resources and capabilities (Barney 1991; 1995; 2001 Conner 1991; Mahoney and Pandian 1992; Amit and Schoemaker 1993). The characteristics of the resource bundle—whether valuable, rare, inimitable, or non-substitutable—are determinants of the organization's ability to survive in the environment. According to this perspective, the entrepreneurial process is one in which the entrepreneurs acquire and develop resources, and where the new venture outcome is to a large extent determined by the nature of the resources the entrepreneurs are able to acquire (Dollinger 1999). In this study, resource-based theory is used as a framework for examining the relationship between initial resources and the survival of technology-based new ventures.

As suggested by Boeker (1988; 1989) and Bamford et al. (1999), early decisions and founding conditions, in the formative stages of an organization, have lasting effects which: imprint the firm, limit its strategic choice, and continue to impact its long-term performance. There are two major reasons for this.

The first reason is that the new firm must pass the initial test of the competing environment. As the new organization is exposed to the market, the environment will select viable organizations that are able to survive. According to the RBV, this selection is based on four characteristics of the new firms resource bundle as mentioned above (Barney 1991; Mata et al. 1995). First, it has to represent value to the customer. This is a basic requirement even when contemplating potential profit. Second, it must be rare—a resource that competitors do not already possess. Third, it must be hard to imitate so that competitors in the market can not easily nullify the advantage. Finally, the resources must not be easily substituted by other resources at the same cost. Failing these criteria, there is a high probability that the new venture will not survive, due to market failure or because it lost the fierce competition of acquiring customers.

The second reason deals with the general path dependence of resource development processes. The early stages of a firm's existence see the development of the organization's deep structures. Deep structures are defined as "*the set of fundamental "choices" a system has made of (1) the basic parts into which its units will be organized and (2) the basic activity pattern that will maintain its existence*" (Gersick 1991:14). These deep structures can be identified in organizations as routines and cultures that guide managerial decisions, but can also be traced back to the initial strategic choices made by the founders (Boeker 1988). In these initial stages, the entrepreneurs must decide on an initial strategy by means of the resources at hand and those they can realistically acquire (Dollinger 1999). This initial strategy, which determines which resources and capabilities to employ and which to develop and acquire, will in turn, result in a new set of available resources when a new strategy is made at the next crossroads. Gersick (1991) illustrates this by means of a decision tree. Once one decision is made, the resulting strategic options are reduced. Hence, even though a specific set of means can result in different strategic decisions, (Sarasvathy 2001) the resource development process is arguably path dependent.

On account of these two reasons—environmental selection of new organizations and the general path dependency of resource development—we argue that initial resources are related to the organizational outcome of the entrepreneurial process. More specifically:

**Main proposition:** *Initial resources, controlled by the entrepreneurs at inception, are significant predictors of NTBF survival.*

Using Barney's (1991) categorization of firm resources, we argue that in the case of technology-based new ventures, organizations have few resources in terms of organizational features and physical assets. In the earliest stages, the technology-based venture consists almost exclusively of the human and social capital embedded in the entrepreneurial team and the features of technology they intend to bring to the market. These resources we label *initial resources*. The following section discusses how we conceptualize the effect of these resources on new firm survival.

## **Valuable Initial Resources and Their Effect on New Venture Survival**

One would assume the initial team size to be related to firm survival, as larger teams are generally associated with more resources (Hambrick and D'Aveni 1992) and resourceful teams are known for their ability to mobilize new competencies (McGrath et al. 1996). Larger entrepreneurial teams, therefore, increase the venture's range of feasible strategies and augment the likelihood of effectuating a successful strategy. Moreover, larger teams may accelerate the decision making processes and may allow for a greater degree of specialization in decision making (Eisenhardt and Schoonhoven 1990). Faster and more specialized decision processes are likely to be an advantage to the venture. One can therefore assume that team size may affect the probability of survival due to the impact on decision making processes and the ability to effectuate successful strategies.

Some previous research has supported this view in terms of firm growth (Eisenhardt and Schoonhoven 1990; Weinzimmer 1997) and performance (Teach et al. 1986; Bruton and Rubanik 2002), but not all previous studies have been conclusive on this point (Birley and Stockley 2000). We hypothesize:

**Hypothesis 1:**        *The more individuals involved in the founding team, the greater the probability of survival for an NTBF is.*

The basis for an effective team is not only the number of team members, but is also highly dependent on the composition of the team. If a team is to be successful in dealing with the challenges of a complex task, or of a difficult environment, it is vital that it be allowed to possess sufficient internal complexity (Morgan, 1997: 483). However, the combination of varying competence within the founding team may result in positive synergistic effects, but may also create hampering and deteriorating conflicts.

Team heterogeneity is generally believed to be a positive management team feature. Hambrick et al. (1996) conclude that heterogeneous teams are more likely to react to changes in the environment, but they are slower in responding than homogeneous teams. Heterogeneous teams have also been found to perform better in complex and turbulent environments (Keck 1997) and antecedent to economic performance in high-technology firms (Smith et al. 1994).

Nevertheless, the literature regarding heterogeneity–performance relationship is not entirely conclusive (Hambrick et al. 1996). One major reason for this is the mediating role of team conflict. Team conflicts can be categorized into two distinct groups: affective conflicts and task conflicts. High levels of affective conflicts are generally associated with lower performance levels (Pelled et al. 1999; Ensley et al. 2002), and larger teams normally have high affective conflict. Heterogeneous teams are also associated with higher levels of task conflict. Task conflict is generally perceived as advantageous, especially in terms of more creative solutions and a wider variety of decision alternatives (Dose and Klimoski, 1999). Indeed, task conflict is seen as a necessary and beneficial component of effective strategic decision-making (Mason and Mitroff, 1981; Schwenk, 1989). This is especially true for new firms where ambiguity is high and where creativity is important (Amason et al., 1997).

Different types of team heterogeneity are found to trigger different kinds of conflicts (Pelled et al. 1999), and some types are more likely to spark task conflicts than others. Heterogeneity with respect to highly job-related attributes is apt to have a stronger relationship to task conflict than is heterogeneity with respect to less job-related attributes (Pelled et al. 1999). Functional background is a very job-related attribute, and is therefore more likely to drive task conflicts. As Finkelstein (1992) argues, teams with a broader functional background will be better prepared to deal with environmental complexities. Further, Kakati (2003) found that the presence of a diversified management team is associated with early success in new ventures. Therefore, we hypothesize that:

**Hypothesis 2:** *A greater degree of heterogeneity in the functional background within the founding team leads to a greater probability of survival for an NTBF.*

Due to learning effects, former entrepreneurial experience present in the team should be considered a valuable resource, as team members have previously faced similar challenges. As Gersick (1994) argues, choices between persistence and change are particularly poignant when managers have little experience to help them interpret the seriousness of those obstacles that arise along the way. However, if members of the team have faced similar challenges in the course of other entrepreneurial efforts, the new venture might be more capable of facing such dilemmas. We therefore hypothesize:

**Hypothesis 3:** *Entrepreneurial experience initially present in the team yields a greater probability of survival for an NTBF.*

In the case of a new technology-based venture, the development of core technology is to a great extent initiated prior to, or at the time of firm founding. The technological strategy developed initially, is therefore likely to establish a path dependency which will predetermine how radical the technology to be commercialized will be.

The development and commercialization of incremental inventions often consume far fewer resources than radical inventions. However, incremental inventions also offer few, if any, sustainable competitive advantages for the new firm (Eisenhardt and Schoonhoven 1990). An incremental invention is per definition developed within an already existing technological paradigm. Already established firms will benefit from their existing assets when commercializing such inventions, thereby enjoying a competitive advantage in comparison to new ventures. However, new ventures commercializing more radical inventions tend to be based upon extensive knowledge creation and/or technology syntheses, which engender resources that already established firms do not possess. Thus, the more radical the core technology of the new venture, the lesser the advantage held by their competitors.

Several scholars have demonstrated that the most relevant difference in strategy across technology-based ventures is the degree of technical innovation within the core technology of the firm (Eisenhardt and Schoonhoven 1990). As put forth by Hindle and Yencken (2003), new ventures need to generate discontinuous innovations involving radical inventions to have the potential for high growth. This leads to our fourth hypothesis;

**Hypothesis 4:** *A greater degree of embedded radicalness in the initially controlled technology leads to a higher probability of survival for an NTBF.*

These four hypotheses reflect important issues related to the resource composition of technology-based new ventures and their subsequent performance. In order to test the proposed hypotheses, we have developed a research design containing longitudinal data from Norwegian and Swedish technology-based start-up companies.

## **Methodology**

The data set originates from a database of Scandinavian technology-based start-ups. The database consists in total of 130 NTBFs that, in their early stages, have cooperated with the Centre of Entrepreneurship and Innovation (GREI) at the Norwegian University of Science and Technology (NTNU). From the initial database 15 cases were excluded due to incomplete information. Additionally, 35 cases were excluded because they were classified as innovation projects by already existing organizations. These projects can make use of resources in their mother institutions and fall outside the framework of this study. The resulting sample for our analyses consists of 80 independent Norwegian (65) and Swedish (15) new technology-based firms.

The data for our analysis were coded from information in the business plans for the new ventures and CV's of the team members. The business plans are all from the 1995-2000 period, are all written imminent to the founding of the firm and before any of the firms had accumulated significant capital. Additional information on survival was collected via follow-up surveys in 1999, 2001, and 2002.

## **Variables**

The investigation of the data material and the assigning of values to the variables for all the cases were accomplished independently by the three authors of this paper. Most of the variables were clearly and directly observable from the business plans, CVs, and questionnaires. Misinterpretations may occur, nonetheless, and in some cases there may be discrepancies in the classification of particular variables. To avoid this and to ensure an adequate reliability when assigning true values to the variables, several criteria were established for each variable prior to coding and iteratively discussed during the process of recording the data. Furthermore, the reliability of the value assignments by the various authors was tested by the means of Pearson correlations for the variables concerning *service orientation* and *technology-base radicalness* categorization. All were significant at the 0.01 level, signifying that the agreement between the individual assignments was high and the variables relatively objective. In the case of divergence between the separate assignments, each case thoroughly was discussed to eliminate misinterpretations and ensure concurrence on the assigned values.

Our dependent status variable in this analysis is *organizational death*. However, in the Cox regression model employed, the dependent variable is *hazard rate* – the probability<sup>5</sup> that an event (*organizational death*) would occur within a particular time interval to a particular firm at risk during that time interval. Thus, the hazard rates represent the longitudinal risk profiles for the NTBFs in the sample. The hazard rate is constructed from three recorded variables. The *establishment year* and the *sensor year* are used to construct the *years of survival*, which defines the hazard rate together with the status variable *organizational death*.

Our independent variables are in accordance with the proposed hypotheses: *team size*, *entrepreneurial experience*, *team heterogeneity*, and *radicalness of the technology*. When determining *team size*, only the management team in the new venture is included. Members of the board are not taken into account, unless it is clear that these members contribute to the operational management of the firm. *Entrepreneurial experience* is a dummy variable distinguishing the entrepreneurial teams if any of the team members have previous experience of founding an organization.

The dominant functional experience (last job held in more than one year) of the founder team was discerned from their CV's. This experience was categorized into five groups; (1) Technical/R&D, (2) Technical/production, (3) Sales/Marketing, (4) Finance, and (5) Management. The *functional heterogeneity* is calculated from Teachman's (1980) formula:

$$H = -\sum_{i=1}^N P_i (\ln P_i)$$

The index takes into account how team members are distributed among the N=5 recorded categories (i). H refers to heterogeneity and  $P_i$  is the fraction of team members falling into category i.

The *radicalness of the technology base* is assigned using the conceptual framework of different innovations developed by Henderson and Clark (1990). As an extension of the traditional custom of categorizing innovations as either incremental or radical, Henderson and

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<sup>5</sup> The hazard rate is usually referred to as a probability (e.g. Allison, 1984) in the discrete case. However, in the continuous case the hazard rate might be greater than 1, and is therefore more precisely referred to as a *death rate per unit of time* (SPSS inc., 1993)

Clark (1990) use the terms architectural and modular innovation as well. *Architectural innovation* refers to the linking together of existing components in a new way, thus changing the architecture of a product. *Modular innovation* refers to a change in the core concept of one or more of a system's components, without changing the architecture. Both architecture and modular innovation are regarded as intermediates between the two extremes of incremental and radical innovation, architectural innovations being more radical than modular innovations.

We also scrutinized for variables that could potentially bias the results, namely *establishment year*, *business sector*, *time to first sale*, and *degree of service orientation*. *Establishment year* was used in the regression to control for potential differences due to the general economic situation in different time periods. *Business sector* was recorded to control for possible differences between industries, whereas the *first sale* control variable captures possible differences between firms in the different organizational phases of development and commercialization/growth.

The varying degrees of *service orientation* of the new ventures' business concepts were classified into four distinct groups ranging from: (1) product oriented manufacturers, and (2) service oriented manufacturers, to (3) physical service providers, and (4) digital service providers. The first group refers to new ventures emphasizing the product they intend to produce, whereas the second group refers to those ventures relying more on the value adding services they add to the product. The third group refers to ventures focusing on offering service wherein there is physical contact with the customer. The fourth group includes ventures offering services where digitalized information is the core product.

### **Statistical approach – The Cox regression model**

Longitudinal data analyses create certain challenges when employing statistical methods. Problems arise when the individual cases are tracked over differing time periods and when the event of interest (in this case *organizational death*) does not occur. By using *time to death* as the dependent variable, information is wasted due to the exclusion of all surviving censored<sup>6</sup> firms. It has been proven that the exclusion of censored cases can produce large biases (Sørensen, 1977; Tuma and Hannan, 1978). Furthermore, by using the status variable

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<sup>6</sup> A case is censored if the event of interest (death) does not occur during the observation period.

*death/alive*, information is wasted because no distinction is made between new venture survival on either side of the defined study period. This means that if the study period is five years, the method will neither distinguish between a survival of one year and survival of four years, nor between survival of six years and survival of twelve years, implying that information is wasted. Event history models deal with these problems, and actually make use of both *death/alive* and *years of survival* in constructing the hazard rate<sup>7</sup>. Thus, the method is advantageous both because it is informationally efficient and because it avoids biases associated with censoring.

The survival data in this study is measured on a discrete basis. However, the empirical model employed, a Cox regression, is a continuous-time hazard model, assuming that events occur at any point in time.<sup>8</sup> Formally, this model is described by the following set of conditions. Let  $T$  be a random variable representing the time,  $t$ , until an event occurs. Let  $\mathfrak{S}(t)$  be the survival function,

$$\mathfrak{S}(t) = \text{pr}(T \geq t)$$

and let  $\lambda(t)$  be the hazard or age-specific failure rate. That is,

$$\lambda(t) = \lim_{\Delta t \rightarrow 0^+} \frac{\text{pr}(t \leq T < t + \Delta t \mid t \leq T)}{\Delta t}$$

It is assumed that a vector,  $z = (z_1, \dots, z_k)$ , of explanatory variables influences the event of interest. Then, the hazard function can, in the continuous case, be modeled by

$$\lambda(t; z) = \lambda_0(t)e^{z\beta},$$

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<sup>7</sup> *Years of survival* represents the observation period for censored cases and the time to death for uncensored cases.

<sup>8</sup> The Cox regression assumes that the events occurring within a time interval are equally distributed over the particular time interval. The discrete data are therefore transformed into continuous data using the means within a time interval. This is, however, only to ease the calculation and does not influence the results.

where  $\beta$  is a  $p \times 1$  vector of unknown regression coefficients (Cox, 1972). The baseline hazard,  $\lambda_0(t)$ , depends only on time, while  $e^{z\beta}$  depends only on the values of the covariates<sup>9</sup> and the regression coefficients. The baseline hazard  $\lambda_0(t)$  is constructed based on the probability of survival due to age for the entire sample, and is therefore an underlying function assumed to be identical in all cases. The actual hazard for a given case at a given time is influenced by the regression covariates ( $z$ ) through  $e^{z\beta}$ . This means that negative  $\beta$ -values ( $e^{z\beta} < 1$ ) will increase the probability of survival, while positive  $\beta$ -values ( $e^{z\beta} > 1$ ) will decrease the probability of survival.

### Results

The majority of the firms (92.5%) were established in the period 1995–1999. In the sample, 60 firms were still in business, while 20 were out, yielding an interim survival rate of 75%. The average age of survival for firms in the sample is 3.8 years, whilst the firms reported dead terminated on average 2.5 years after establishment. Looking more closely at the age distribution of firm failure, 65% of the failed firms do so within their two first years of operation (see Table 1). This distribution was expected and may be understood as liability of newness (Stinchcombe 1965).

**Table 1: Age distribution and survival for the NTBFs in the sample**

Age	Survivors	Non-survivors	Total
1	5	6	11
2	16	7	23
3	8	2	10
4	11	3	14
5	10	1	11
6	6	1	7
7	1		1
8	2		2
15	1		1
Total	60	20	80

Table 2 presents the simple bivariate relationships (Pearson Correlations) among the covariates. Most of these variables show no sign of correlation, and in the cases where such relationships are present the correlations are mainly weak ( $|r| < 0.5$ ).<sup>10</sup> This indicates that

<sup>9</sup> In the Cox model, independent variables are usually called covariates (SPSS inc., 1993). The terms are equivalent and used interchangeable throughout the text.

<sup>10</sup> The strength of Pearson's Correlation Coefficient is generally classified into weak ( $|r| \leq 0.5$ ), moderate  $0.5 < |r| < 0.8$ , and strong ( $|r| \geq 0.8$ ).

problems of multicollinearity are unlikely to be manifest in the data. However, variables with moderate or strong correlation ( $|r| > 0.5$ ) may cause multicollinearity problems. The correlation between team size and heterogeneity is slightly above 0.5. Therefore, two other tests for multicollinearity were performed. Examination of the VIF coefficients and the eigenvalues of the variables, demonstrate that the explanatory variables are independent.

**Table 2: Descriptive Statistics and Pearson Correlations for Regression variables (N = 80)**

Variable	Mean	S.D.	VIF	Eigenvalue	1	2	3	4	5	6	7
1 Establishment year	1997.9	2.19	1.474	.637							
2 Business sector	4.41	3.53	1.715	.564	-.39**						
3 First sale occurred	.51	.50	1.145	.400	-.11	.10					
4 Service orientation	1.71	1.08	1.324	.364	.00	.32**	.16				
5 Team size	2.28	1.17	3.406	.221	-.16	.07	.19	.15			
6 Entrepreneurial experience	.40	.49	1.173	.101	-.10	.03	.01	-.15	.05		
7 Team heterogeneity	.41	.48	2.052	.076	-.16	.25*	-.14	.05	.52**	.05	
8 Radicalness of the technology	1.93	1.11	1.352	.000	-.26*	-.16	-.16	-.21	.11	.03	.20

\* = Correlation is significant at the 0.05 level (2-tailed)

\*\* = Correlation is significant at the 0.01 level (2-tailed)

The results from the hazard rate analysis of how initial resources influence NTBF survival are reported in Table 3. For the regression performed in this analysis, 13 cases were rejected because of missing values, so the analysis was performed on 67 cases. The regression model consists of four different blocks, where covariates are added in stages to display their contribution to the regression. The first block consists of the control variables. In the second block team size is included. As the Chi-square test indicates, including team size does not make a significant contribution to the regression. However, the team experience characteristics enter in block three and contribute significantly, making the overall regression model significant at the 0.1 level. In the fourth block the technological aspect is included, and this dimension also significantly contributes to explaining the variance between survivors and failures.

The overall regression, with all four blocks included, is significant at the 0.05 level, which supports our main proposition that initial resources are significant predictors of NTBF survival. Given that block three is only significant at the 0.10 level, and that including the technological dimension (in block 4) makes a significant contribution, this provides preliminary support for our notion that important initial resources within both dimensions

investigated—human and social capital and features of technology—affect the longitudinal performance in terms of survival.

**Table 3: Results from hazard rate analysis of initial resources' influence on NTBF's survival (N=67)**

Variable	Block 1	Block 2	Block 3	Block 4
Establishment year	0.141 (0.139)	0.126 (0.139)	0.189 (0.144)	0.121 (0.151)
Business sector	0.091 (0.078)	0.089 (0.078)	0.209** (0.092)	0.208** (0.100)
First sale occurred	-0.762 (0.552)	-0.703 (0.557)	-1.213* (0.635)	-1.462** (0.681)
Service orientation	0.001 (0.228)	0.011 (0.227)	-0.247 (0.257)	-0.455* (0.275)
Team size		-0.163 (0.257)	0.527* (0.307)	0.698** (0.338)
Entrepreneurial experience present in the team			-0.389 (0.550)	-0.678 (0.563)
Heterogeneity within functional experience of the team members			-2.352*** (0.876)	-2.786*** (0.953)
Radicalness of the technology base				-0.634** (0.286)
-2 Log Likelihood	122.082	121.667	113.063*	107.326**
Change from previous block		0.415 (1)	8.057 (2)***	5.737 (1)**
Chi-square (d.f.)				

\* =  $p < 0.1$ , \*\* =  $p < 0.05$ , \*\*\* =  $p < 0.01$   
Two-tailed tests Standard errors are in parentheses

### Control variables

The year of establishment did not significantly affect the survival rate of the firms investigated. This suggests that external or environmental attributes do not seem to influence the survival of the NTBFs in our sample disparately within the limited time period of the study. However, the sample covers a broad spectrum of industries, and the analysis shows significant differences in organizational death rates between the various business sectors in question. This was as anticipated, since different market conditions across industries are expected to yield differences in survival data. Further, new ventures in various business sectors are associated with variations in time-spent during different phases of their development. Within a limited period of time, these differences are likely to cause variation in survival data across business sectors.

The increased survival rate among firms that have experienced their first sale supports the contention that the probability of survival is significantly different in the organizational phases of development and commercialization/growth. This also lends preliminary support to

the well established notion that early market acceptance is indeed important to technology-based new ventures. Furthermore, the degree of service orientation significantly impacted survival. Firms with a high degree of service orientation seem to have a greater probability of survival than product-oriented firms.

### **Explanatory variables**

Hypothesis 1 stated, in essence, that team size will positively influence the probability of survival of NTBFs. Table 3 shows that this parameter is statistically significant at the 0.05 level. However, the  $\beta$ -value is positive (increasing the hazard rate), indicating that, contrary to our expectations, smaller teams have an increased probability of survival.

Hypothesis 2 stated that a greater degree of heterogeneity in the functional background within the founding team leads to a greater probability of survival. This hypothesis is supported in the analysis at the 0.01 level.

Hypothesis 3 focused on team experience, suggesting that entrepreneurial experience initially present in the founding team would increase the probability of survival. Table 3, the analysis of the firms in the sample, shows no statistically significant differences between survivors and non-survivors in terms of entrepreneurial experience.

As shown in Table 3, the sign of the team size variable changes when the team experience variables are included in block 3. Although the effect of team size is not significant in block 2, this may indicate that a mediating effect exists, stemming from the experience variables. This is especially true of the heterogeneity variable, as this variable turns out to be a significant contribution to the model. It may be, therefore, that team size has a positive effect due to its function as a proxy for competence breadth. However, when taking into account the team heterogeneity, and thereby the competence density, it appears that teams should not be too large, due to increased affective conflicts.

In terms of the technological dimension of resources, the analysis finds support for hypothesis 4. As expected, a higher degree of technological radicalness increases the probability of survival. This finding is significant at the 0.05 level. Even though a radical invention does not necessarily create a competitive advantage for the new venture, the resources controlled by

already established businesses do not confer these firms advantages as is the case for incremental inventions.

**Table 4: Hypothesis summary**

Hypothesis	Support
1: The more individuals involved in the founding team, the higher is the probability of survival for an NTBF.	Not supported *
2: A greater degree of heterogeneity in the functional background within the founding team leads to a greater probability of survival for an NTBF.	Supported (p < 0.01)
3: Entrepreneurial experience initially present in the team leads to greater probability of survival for an NTBF.	Not supported
4: The greater degree of embedded radicalness in the initially controlled technology leads to higher probability of survival for an NTBF.	Supported (p < 0.05)

\* The contrary hypothesis is supported (p < 0.05)

### **Discussion**

The analysis provides support for our main proposition that initial internal resources are antecedents of a new, technology-based firm’s survival. This is an important finding that supplements existing literature on the effects of new venture founding conditions. It also places emphasis on the importance of early phase management for new firms that seek to take new technology to market. Even though this study only deals with a few of the basic resources entrepreneurs might control at firm inception, the conclusion that these resources are predictors of firm survival in the longer run, are intriguing for at least two reasons.

First of all, it renders support to the notion of a resource development path dependency in technology-based firms. The finding that those resources which form the basis for the firm’s initial strategy bear long-term consequences for organizational outcomes, shows that even new firms, unfettered by bureaucracy and other organizational mechanisms known to create inertia, are to some extent, bound to their history. This is a key lesson for technology investors and managers in such firms, as early strategic decisions determine the path for new ventures and limit the strategic options at later stages. Particular effort should be channeled into ensuring that initial decisions do not constraint the firm’s option for growth in later stages. Investors who desire to significantly influence growth potential in their investment objects should take an especially active role in strategic management during the founding stages. Following the rationale of path dependency it is hard for managers or technology investors to

refocus a new firm onto a new strategic path at later stages, even if they contribute with significant resources.

Secondly, the study also supports recent studies that advocate internal resources as the basis for strategy formulation (Grant, 1991; Mahoney, 1995; Teece, Pisano and Shuen, 1997) and the importance of management of internal resources for the improvement of organizational outcomes (Hambrick and Mason, 1984; Boeker, 1989; Smith et al., 1994; Hambrick, Cho and Chen, 1996). Our findings suggest that successful strategic management in new firms is found at the intersection of where internal resources meet the business opportunity. For example, in terms of technology development, technology should be commercialized in a market that makes it as radical as possible among its competitors. Effort should be made to diminish the competitive advantages of established players, thus weakening their position when competing with the new venture. Likewise, this study has shown that the management of the team competence structure can improve organizational outcomes.

The findings also constitute an interesting challenge to scholarly models for new firm strategic management as they pinpoint two aspects which make common strategic models less applicable for new firm managers. First, popular models such as the “competitive forces approach” (Porter, 1980) and “strategic conflict approach” (Shapiro, 1989) have been developed from the assumption that the actors are large with few resource constraints. This is an assumption that can not be considered lightly in the case of new firms that are generally resource strapped and where the resource base leaves little strategic freedom. Second, they overemphasize the importance of “strategizing”. That is, they assume that successful strategic management and extraordinary revenue are earned through strategic moves that keep the competitors off balance and secure an advantageous place in the strategic landscape, and pay less attention to the development of the resources from which they seek to capitalize (Grant, 1991; Teece et al., 1997). New firms that seek to introduce new technology into a market of incumbents may find their resources insufficient to create sustainable strategic advantages against larger established actors in the industry. Technology entrepreneurs in processes characterized by resource constraints and path dependency are in need of other strategic tools that emphasize the process of generating revenue from the narrow resource base that they manage.

The study also provides some interesting insight into the ongoing discussion on new venture teams. In terms of the relationship between team size and heterogeneity, previous literature suggests a positive relationship between team resources and new venture outcome, mediated by levels of conflict and cohesion (Ensley et al. 1999; Eisenhardt and Schoonhoven 1990; Bruton and Rubanik 2002; Ensley et al. 2002). Our study suggests that larger teams are advantageous only if one does not control for heterogeneity. Taking into account team heterogeneity, our study suggests that it is the *competence density* of the entrepreneurial team that is the key to performance. In other words, it is the team size mediated by the variance of the competencies that influences survival. Interpreting this result under the cohesion-conflict framework, suggests that small and heterogeneous teams can overcome more resourceful counterparts. This is because such teams avoid affective conflicts due to their small size, yet retain task conflict through high competence heterogeneity. Further, it is also possible that teams with a high competence density are more efficient, as tasks can be organized according to the competence profile of the team members. However, our measures are based on the assumption that a linear, or at least, a positive relationship exists between team size and the probability of survival. Conversely, one may assume that this relationship could be curve linear (Bruton and Rubanik 2002). That is, the productivity of the team may actually decrease when the team reaches a critical size and the correlation may, at this point, be reversed. Our model would not be able to detect such a relationship, and this may be another explanation for why the probability of survival was negatively influenced by team size.

Contrary to what we expected the presence of entrepreneurial experience in the team did not have a positive effect on the likelihood of new venture survival. One explanation might be related to the Einstellung effect, which is the tendency of subjects to persist with the same approach to a problem or series of problems whether or not that approach is productive (Luchins 1940). According to Ericsson and Simon (1984) the Einstellung effect is not inadvertent, but is a deliberate choice of persisting with a strategy as long as problems appear to be part of the same nature. In our hypothesis, former entrepreneurial experience was considered positive irrespective of whether the former entrepreneur had been successful or not. Therefore, unsuccessful entrepreneurs may persist with the same strategies within the new venture despite the fact that those strategies were not productive in the past. Consequently, the probability of survival for the new venture does not increase. Another explanation might be related to the idiosyncrasy of the entrepreneurial process that makes previous experience in similar attempts less valuable. Though the entrepreneurs have

experience from previous firm establishments, product market idiosyncrasies make it far from certain that knowledge from previous firm start-ups can successfully be incorporated into a new setting.

Our analysis shows that controlling a radical innovation should be considered a valuable resource, apt to increase the probability of new venture survival. Radical innovations both allow for greater profit potential and reduce the comparative advantages of existing competitors. In former studies, researchers have utilized patent data as a measure of innovativeness within organizations. In our case, patent data served as a poor proxy for an innovation's potential or uniqueness as several cases in our sample sidestepped patenting for strategic reasons. Further, according to Griliches' (1990), patented technologies differ greatly in the magnitude of inventive output associated with them. By employing the conceptual framework of different innovations developed by Henderson and Clark (1990), the results indicate the latter to be a better indicator of the value of technological resources than patent data.

### ***Limitations and Further Research***

This study has some limitations that, when considered, might help advance future research. First of all, even though the analysis supports our main proposition, our research design fails to detect spurious effects due to events in the pre-institutionalization phase. Obviously, the business idea has a history prior to firm establishment and it is likely there is some sort of gravity between technology and competent founders prior to firm establishment. A technology that has been developed and exposed to a community of practice over several years is likely to attract the attention of many competent entrepreneurs that see business opportunities for their commercial value. Our research model does not account for this effect and we suggest that further research should seek to unveil the dynamics of the pre-establishment stages and determine whether there are acquired resources in these phases that are valuable for subsequent commercialization efforts.

Another limitation is that our study considers survival as the sole measure of organizational outcome. There is an ongoing discussion among scholars regarding how to measure performance in new ventures (Murphy, Trailer and Hill, 1996). We have argued for the appropriateness of survival as the performance variable in this type of study, operating from a

technology transfer perspective, however other studies addressing the effects of initial conditions, such as Bamford et al. (1999) and Doutriaux (1992), have used performance measures such as growth and profit. We agree with Murphy et al. (1996) in their conclusion that whenever possible performance should be measured across several dimensions; however in our case, wherein cases were studied even before a legal entity was formed, standard growth measures such as growth in sales and growth in market shares make little sense. The same argument applies to profit as a performance measure. The firms in our sample exhibit great heterogeneity in terms of the time necessary for technology development and also in terms of their continuous search for new capital in growth phases; hence return on investments is not an appropriate performance measure. This is a general problem for researchers studying firms in their inception phases and more work should be directed towards finding more rigid performance measures for new firms.

Finally, this study has pointed to a few basic relationships between new firm survival, the initial characteristics of the entrepreneurial team, and the technology they possess. These findings suggest path dependence in the evolution of a technology-based new firm's resource bundle and underline the importance of successful early-stage management of internal resources. The concept of path dependence raises a range of interesting issues that should be addressed in entrepreneurship research. For example, to what extent are new entrepreneurial firms able to remain dynamic in the composition of their resource bundles? And, to what extent are they bound to their history? Further, assuming path dependency, one also assumes the existence of certain factors that cause inertia and restrict strategic freedom in new ventures. Further investigations seeking to unveil these factors would be of great value for both practitioners and scholars in the field.

### **Conclusions**

By employing a longitudinal design, this study suggests that initial resources controlled by technology-based new ventures are important antecedents for their survival in later stages. This study focused on resources within the entrepreneurs' control. The results indicate that both initial team composition and technology radicalness appear to be significant predictors of new firm survival. This study therefore advances the stream of research on the factors impacting new venture survival, as well as the more specific stream of research on the role of initial resources and path dependency of resource development. In conclusion we join in the

suggestion of Bamford et al. (1999) that considerable research effort should be focused on investigating antecedents and the consequences of those initial strategic and market decisions made by new firms.

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Paper 4

Internationalization of small high-tech firms:  
- the role of information technology

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Published in the Journal of EuroMarketing, (2004), Volume 13, Number 2/3

## **Internationalization of small high-tech firms: - the role of information technology**

### ***Abstract***

This paper aims to address the relationship between two current phenomena in modern economy, namely the significant advances in Information and Communication Technology (ICT) and the increasing number of small international firms. Previous research on small international firms has identified recent advances in ICT as a trend that presumably facilitates the process of introducing products to international markets. However, little empirical work has been conducted to establish the dynamics behind this relationship. Pulling from a sample of 310 small Norwegian exporting manufacturers, this study investigates the role of ICT in small firm internationalization aiming to see whether ICT indeed plays a facilitating role in the internationalization process. We investigate three direct relationships between ICT and factors related to the international behavior of small firms (international expansion, competitive advantages, and managerial orientation). In order to understand the underlying dynamics, we also take a closer look at the interaction effects between these factors, the firm's international strategy, and ICT in a structural equation model. Findings from the study suggest that small firms with an international vision and strong international customer orientation adopt ICT solutions to realize their international intentions. Especially high technology firms find ICT an effective business tool. On the performance side, this study finds evidence that ICT-intensive firms internationalize faster and more extensively than less ICT-intensive firms. It seems that ICT is important, making it possible for small, technology advanced firms with strong international visions to follow niche strategies in international markets. It is then, reason to conclude that ICT plays an important role in small firm internationalization - both as a channel for opportunity identification and as a powerful tool in the execution of an international strategy.

## ***Introduction***

International business has traditionally been the arena of large multinational enterprises (Chandler 1986; Caves 1996). However, recent studies have provided evidence that small firms are increasingly taking part in international trade (Christensen 1991; Jolly et al. 1992; Rennie 1993; Moen 2000). This is an interesting and important observation when we consider the importance of small companies in most western economies as major contributors to innovation and accounting for a large share of employment (OECD 1998; OECD 2000).

The internationalization of small firms is different from large firms basically due to resource constraints. Not only do financial resources restrict the internationalization efforts of small firms, but also high uncertainty, the high costs of information, and lack of experiential market knowledge (Cavusgil 1980). Jointly, these factors have led scholars to depict the internationalization of small firms as an incremental process (Johanson and Wiedersheim-Paul 1975; Johanson and Vahlne 1977; Bilkey and Tesar 1978; Johanson and Vahlne 1990) where firms gradually increase their foreign commitment with experiential knowledge and resources obtained in other markets. However, several recent changes in the international economy and technology have made it easier and less resource demanding for small firms to pursue an international strategy (Knight and Cavusgil 1996; Aspelund and Moen 2001; Stray, Bridgewater and Murray 2001). Despite the existence of multiple factors that might have given rise to this development, recent major advances in Information and Communication Technology (ICT) appear in several studies as one of the main contributors (Oviatt and McDougall 1994; Knight and Cavusgil 1996; Knight 1997; Madsen and Servais 1997; Aspelund and Moen 2001) leading an increasing portion of small firms into foreign markets (Rennie 1993; Quelch and Klein 1996). Information and communication technology seems to be an especially important source for international market information and a tool in overcoming communication barriers.

The main object of this paper is to understand ICT's facilitating role in the internationalization process of small businesses. Even though several scholars have argued for this relationship, they have also pointed to the limited empirical evidence presented (Hamill 1997; Samiee 1998). We aim to establish empirical evidence for some of the propositions from previous literature. The first hypotheses treats the basic assumption of that increased use of ICT affect the rapidity and extent of small firm internationalization. Secondly, we address

whether small firms are able to build international market advantages from their use of ICT. The third hypothesis relates to whether some firms are more likely to integrate ICT in their international marketing than other firms. More specifically, we seek to find out if technology-based firms and firms with strong international orientation are overrepresented among those that have adopted ICT in their international marketing. Finally, we test the interrelationship between the variables in the model. Previous research has suggested that international orientation, niche focus strategies, and use of ICT are positively interrelated, resulting in a positive spiral effect on small technology-based firm internationalization. We test this hypothesis in a structural equation model.

### ***ICT and Small Firm Internationalization***

Fundamental questions for practitioners of international marketing in small firms appear quite different when seen through “cyberspace” (Hamill and Gregory 1997). First, there is the information perspective. The Internet represents an enormous source of information. According to researchers at Berkeley University, in the year 2000 the Internet consisted of approximately 550 billion web-connected documents, about 95% of which were publicly accessible (Lyman, Varian et al. 2000). Though only a tiny fraction of this information would be considered relevant for a firm, the amount and availability of information can increase the likelihood that management will consider internationalization a promising strategy for firm growth. The information also allows for the cross validation of market information and thereby reduces the risks involved with market entry when the firm does not possess experiential market knowledge (Yeoh 2000).

Second, ICT can reduce communication barriers that often occur for geographically dispersed organizations. Both internal and external communication is cheaper and often more convenient with the new technology (Angelides 1997; Hamill and Gregory 1997; Poon and Jevons 1997). Advanced ICT also allows communication of richer information than traditional telecommunication systems. That means that the communication of information that previously required the presence of a specific person or physical good can be entangled from those and communicated through multimedia. These two features, the convenience and richness of communication, make the execution of an international marketing and sales campaign possible with the limited resources of small and newly established firms.

The third feature is the reduction in price of advanced information systems over the past decade. What previously was considered as large investments feasible for MNE's only is now available to all firms in the form of standard solutions at a fraction of the price.

These three properties make ICT the ideal tool for practitioners of international marketing serving as a low cost gateway to international markets (Hamill 1997). Moreover, it represents an opportunity to create competitive advantages by combining the new resource (ICT) with the firm's existing resource bundle.

### ***Hypotheses***

Christensen (1991) wrote an excellent article on the reality that faces more and more small companies in countries with small domestic markets. The growth of large multinational enterprises (MNEs) pushes small firms to adopt niche strategies to avoid head-to-head competition. Also, often the domestic market is not large enough to support the firm's activities, thus the small firm is forced to pursue small product niches in foreign markets. In the process of seeking foreign opportunities, the Internet and other sources of electronic information can be a great source of information about relevant international market opportunities, especially for new firms that lack market specific experiential knowledge. Moreover, the exploitation of these opportunities is increasingly feasible, also for newly established firms with resource constraints, due to effective and low-cost information technology. We therefore hypothesize that:

*H1a: Small firms using advanced information technology extensively will experience a shorter time from establishment to first export sale than small firms using advanced information technology to a lesser extent.*

Furthermore, regardless of firm age, a systematic investigation of foreign market information can lead the firm to identify opportunities in more markets because low information costs allow a more extensive environmental scanning. The realization of exports to more markets can also be the result of unsolicited contact from customers due to Internet presence or as a result of matchmaking in virtual communities such as electronic markets (Klein and Quelch 1997). In any case, integration of ICT in the firm's international business model can reduce

the complexity of running a geographically disperse organization, making it possible to serve many markets even with limited resources:

*H1b: Small firms using advanced information technology extensively will export to more countries than small firms using advanced information technology to a lesser degree.*

Once international markets have been identified, the firm needs to develop an effective market strategy for each specific market. If the firm lacks experiential market knowledge, it can to a certain extent, compensate for this by obtaining more information from other sources. Hence, ICT-intensive firms are likely to rely on information from more sources to develop market strategies than less ICT-intensive firms are. As greater information search is associated with greater international performance levels (Yeoh 2000), we would expect that:

*H1c: Small firms using advanced information technology extensively will achieve a higher export sales share than small firms using advanced information technology less extensively.*

From the perspective of competitive advantage, advances in ICT have made a broad range of tools (i.e. intranets, extranets, electronic mail services, video conferencing, virtual market places, ERPs, electronic business solutions, etc) available for small firms at low costs. The consequence is that large firms no longer have the competitive advantage in terms of the expensive information systems needed to coordinate geographically disperse operations (Knight and Cavusgil 1996). However, following the same reasoning, small firms using advanced ICT would have the same competitive advantage over other small firms not utilizing ICT in the same manner.

We hypothesize that small ICT intensive firms will have a strong competitive market advantage over their competitors because they can use ICT to make downstream operations more effective while achieving efficient communication with agents and customers in foreign markets.

*H2a: Small firms using advanced information technology extensively will have a stronger market advantage over their competitors than small firms using advanced information technology to a lesser degree.*

Also, improved communication as a result of ICT should result in greater efficiencies across the whole value chain. This in turn should give rise to a price advantage for the firm.

*H2b: Small firms using advanced information technology extensively will have a stronger price advantage over their competitors than small firms using advanced information technology to a lesser degree.*

In this paper we treat ICT as an information and communication tool. There is little evidence that ICT, as such, can give a technological advantage to a firm. However, there is still likely to be a positive correlation between *ICT intensity* and technological competitive advantage for historical and strategic reasons. First, standardized electronic networks such as the Internet have their roots in military and research institutions (Hamill 1997) and the principal users have been researchers who have used the Internet to communicate with communities of practice. It is, therefore, likely that technology-oriented firms are early adopters of ICT since they employ experienced and qualified users. Secondly, technology and knowledge intensive industries are highly international (Autio et al. 2000, Burgel and Murray 2000) and target customers with specific needs, regardless of geographic location (Boter and Holmquist 1996). For these firms, ICT represents a very powerful tool for routines and communication in globally disperse organizations.

*H3a: Small firms with a strong technology advantage will be more ICT intensive than small firms with a weaker technological advantage.*

In addition to ICT as a tool for strategic management, it can also be a powerful tool for leadership purposes (Lucas 1996). In co-optimizing ICT and the organizational structure, huge benefits can be achieved through more efficient coordination and communication of common values and beliefs. This is consistent with Mata et al.'s (1995) conceptual analysis of competitive advantage and ICT. They conclude that other attributes of ICT, such as those mentioned above, can at the best can give a firm a temporary competitive advantage, while the unique managerial understanding of how ICT can be implemented to support the core business concept can lead to a sustainable competitive advantage. Theoretical reviews and practice have shown that ICT can be a powerful tool for a small firm with international ambitions. We hypothesize, therefore, that such firms will implement ICT solutions to support their international operations to a larger extent.

*H3b: Small firms with a strong international orientation will use advanced information technology more extensively than small firms with less of an international orientation.*

International orientation, competitive advantages, and international strategies may vary between firms. It is possible that an interaction between manager orientation, strategy, and competitiveness does exist, and that the use of information and communication technology is part of such relationships. The hypothesis above suggests that competitive profile and managerial orientation influence adoption and use of ICT, but ICT also affect the firm in terms of competitive profile and international behavior. We hypothesize that these factors (competitive profile, international strategy, managerial orientation, and ICT) positively influence each another. This is an important hypothesis in order to understand the facilitating role of ICT in small firm internationalization.

*H4: There will be a close and complex positive relationship between the key explanatory variables in the study (competitive profile, international strategies, and managerial orientation) and between these variables and the use of ICT.*

### **Method**

The statistical analysis in this study is based on quantitative data from 335 small Norwegian manufacturing exporters. One thousand five hundred small manufacturing exporters were drawn randomly from the Kompass Norway database and sent a questionnaire, yielding a response rate of 23%. The sample is cross-sectional, and the three selection criteria were: size (less than 250 employees), that they were manufacturers, and finally that they were involved in export activities. We chose to look at manufacturers exclusively because manufacturers have been the focus of attention in most of the literature on small firm internationalization, and hence, their internationalization behavior is better understood than service firms. Three hundred and ten of the valid responses were found usable for the analysis, and 25 were deleted from the sample, as they did not yield usable answers in terms of the key variable in this study, namely use of ICT. Table 1 shows the descriptive statistics of the sample.

<b>Table 1: Description of sample (n=310)</b>				
	Mean	Mode	%	Cumulative %
Employees	49	26		
1-10			23,0	23,0
11-30			31,9	54,9
31-100			32,8	87,7
101-→			12,3	100,0
Annual turnover (in 10 <sup>6</sup> NOK ≅ US\$ 85k)	66	34		
1-10			19,7	19,7
10.1-30			25,9	45,6
30.1-100			36,9	82,5
100.1→			17,5	100,0
Year of establishment	1960	1970		
← 1945			25,4	25,4
1946-1970			25,7	51,1
1971-1985			20,4	71,5
1986→			28,5	100,0
Market share in domestic market	40%	35%		
←15%			27,3	27,3
16-25%			11,2	38,5
26-50%			30,3	68,8
51-75%			15,6	84,4
76-100%			15,6	100,0

The firms in the sample are generally small in size, with regard to both the number of employees and annual turnover. The majority of the firms have 36 employees or less, however the mean value is 49. Almost a quarter of the sample is made up of micro firms (10 employees or less). The age distribution is skewed towards the right with a few very old firms and a large proportion of relatively new firms. The distribution of market share in the domestic market indicates that the sample consists mainly of firms in niche markets. This conclusion is based on the firms' small size and relatively high domestic market share.

### **Statistical analysis**

The analyses for the first three hypotheses were performed using one-way analyses of variance (ANOVA). This approach has the advantage that we can assess both the variance as well as the differences in means between the groups of firms in a Bonferroni test. For the hypothesis suggesting strong interaction effects between the variables and between these variables and ICT use, structural equation modeling was performed.

## Measures

The indices used in the study (see the appendix) are based on the works of Knight (1997), Porter (1980), Day and Wensley (1988), Dess and Davis (1984), and Namiki (1988), while the items for *Numbers of Export Markets* and *Foreign Markets Sales Share* are simply based on the responses from single questions in the survey. The *Time to First Export* variable is the number of years from firm foundation to the fulfillment of the first foreign sales order. The remaining variables used in the study are computed by adding specific items, based on 7-point Likert scales from the questionnaire, and dividing by the number of items.

### *ICT intensity*

The *ICT intensity* variable is adopted from (Knight 1997). It consists of three items pertaining to the extent the firm uses the Internet and e-mail to coordinate their international activities and to perform market research. For the analyses we have divided the sample into three groups of firms of increasing *ICT-Intensity*. The separation point was set at 2 and 4 on the indexed scale, which resulted in three groups of approximately equal size (92, 110, and 108 respectively for low, medium, and high *ICT-intensity* respectively). According to the specific items in the questionnaire, these groups represent firms that 1) don't use ICT, 2) some ICT use, but not to a great extent and not as an integrated part of international marketing, 3) extensive use of ICT as an integrated part of international marketing.

### *Competitive Advantages*

Competitive advantages were measured in three dimensions, namely: market, price, and technology. The *Market Advantage* index was constructed from five items pertaining to how the firm's marketing activities compare to their strongest competitors. The index is constructed of items related to how management perceives the effectiveness of international downstream activities, such as: service, training, management, planning, organization, financing, distribution, and local-level marketing in foreign markets.

International value-chain efficiency is measured in the *Price Advantage* index. The index is constructed of eight items pertaining to production, access to raw material, purchasing, product pricing, efficient advertising, distribution, and pricing in foreign markets.

Similarly, the *Technology Advantage* index is constructed of eight items related to how the firm compares to their competitors on uniqueness of technology and product performance.

More specifically, the items measure how management perceives their own product, technology performance, and uniqueness as compared to their most important competitors, including their ability to deliver highly specialized products.

### *International Orientation*

The managerial international orientation is an important antecedent of export performance according to the Aaby and Slater framework (1989). In this study, this factor was measured across four dimensions consistent with Knight (1997), *International Vision*, *International Resource Commitment*, *International Customer Orientation*, and *International Customer Responsiveness*.

The first two indices aim to measure whether management has an international vision for the venture and whether they allocate sufficient resources to international marketing. The first index is labeled *International Vision* and consists of three items addressing the management's focus on exporting, the development of international resources, and whether management considers the whole world their market. The *International Commitment* index is based on two items addressing whether sufficient financial and human capital was allocated to international activities.

We also wanted to measure whether management focused on feedback from their international customers and whether they were able to react to the feedback. The first is labeled *International Customer Orientation* and is an index based on whether the international market strategy was based on actual customer knowledge and whether market success was highly dependent on customer satisfaction and after sales service. The latter, *International Responsiveness* is a four-item index based on the firm's ability to internalize customer feedback and respond to it.

### *International Strategy*

In terms of international strategy, we have one measure related to the degree of specialization of the product niche; namely *Niche Focus Strategy*. The index comprises five items on the level of product specialization, uniqueness of customer demands, and emphasis on differentiation in international marketing.

**Table 2: Reliability analysis**

	Cronbach's Alpha
<b>Grouping variable</b>	
ICT intensity	0.85
<b>Competitive advantages</b>	
Technology advantage	0.87
Marketing advantage	0.80
Price advantage	0.75
<b>International orientation</b>	
Managerial Commitment	0.62
International Vision	0.78
Customer Orientation	0.68
Customer Responsiveness	0.74
<b>International Strategy</b>	
Niche Focus Strategy	0.82

As one can see from Table 2, all indices used in the analysis, report high Cronbach alpha values in the reliability analysis.

### Analysis

Based on the values for the variable *ICT-Intensity* we formed three groups of firms as described above. Table 3 shows the descriptive data from the groups. The firms in group 1, firms with no use of ICT, are slightly smaller in size than the two other groups. This group also has a less dominant role in the domestic market. We also see that group 3, representing firms where ICT play an important role in international marketing, on average, consists of younger firms than the less *ICT-intensive* groups. It is intriguing, however not surprising, that it is the new firms that report the most use of advanced IT.

**Table 3: Description of the three groups of firms**

	<u>1</u>		<u>2</u>		<u>3</u>	
	No ICT use (n=92)		Some ICT use (n=110)		Extensive ICT use (n=108)	
	Mean	St. Dev	Mean	St. Dev	Mean	St. Dev
Employees	35,7	51,2	55,7	69,0	56,8	82,6
Annual turnover (Mill NOK)	40,0	44,2	81,5	142,2	73,9	112,4
Year of establishment	1955	32,2	1956	33,9	1967	33,7
Market share in domestic market	35,1	27,2	39,9	29,3	45,6	30,8

To assess hypotheses H1a-c we performed a one-way ANOVA with Bonferroni tests on the relationship between the export performance measures *Time to First Export*, *Number of Export Markets*, and *Export Market Sales Share* to the discrete variable ICT-intensity. As we can see from Table 4, the results support hypothesis H1a-c. There is a positive relationship between the extent ICT-intensity in international marketing of a firm and the rapidity and extent of international engagement.

**Table 4: Results from the comparison analysis on ICT and international engagement**

Export Issues	Mean			ANOVA
	<u>1</u>	<u>2</u>	<u>3</u>	F-value (sign.)
Time to First Export	18,2	20,6 <sup>3</sup>	11,4 <sup>2</sup>	3,956*
Number of Export Markets	7,2 <sup>2,3</sup>	11,5 <sup>1</sup>	14,2 <sup>1</sup>	7,840***
Export Sales Share	34,2	44,4	44,2	3,083*

\*: p<0.05, \*\*: p<0.01, \*\*\*: p<0.001

1,2,3: denote significant group differences, Bonferroni test

Table 5 reports the results of the analysis on the relationship between competitive advantages and *ICT-intensity*. The analysis did not support hypotheses H2a and H2b. The ICT-intensive firms did not appear to have a stronger market or price advantage as compared to their competitors. However, we found strong support for hypothesis H3a on the relationship between *ICT-intensity* and *Technology Advantage*. It seems like technology-oriented firms have a stronger tendency to employ ICT in international marketing.

**Table 5: Results from the comparison analysis on ICT and competitive advantages**

Competitive Advantages	Mean			ANOVA
	<u>1</u>	<u>2</u>	<u>3</u>	F-value (sign.)
Market Advantage	4,36	4,38	4,40	0,067
Price Advantage	4,28	4,36	4,39	0,541
Technology Advantage	4,24 <sup>2,3</sup>	4,70 <sup>1,3</sup>	5,27 <sup>1,2</sup>	21,761***

\*: p<0.05, \*\*: p<0.01, \*\*\*: p<0.001

1,2,3: denote significant group differences, Bonferroni test

To assess hypothesis H3b, we compared four variables to *ICT-Intensity* (Table 6). The analysis shows strong, positive relationships between *ICT-Intensity* and International orientation on the dimensions *International Vision* and *International Customer Orientation*. Hypothesis H3b is therefore supported by the data; it seems internationally oriented firms to a greater extent employ ICT in marketing. However, resource commitment to international marketing and the ability to respond to international market feedback did not report significant differences between firms of different *ICT-intensity*.

**Table 6: Results from the comparison analysis on ICT and international orientation**

International Orientation	Mean			ANOVA
	1	2	3	F-value (sign.)
Int. Vision	4,37 <sup>2,3</sup>	5,08 <sup>1</sup>	5,35 <sup>1</sup>	14,673***
Int. Resource Commitment	4,23	4,00	3,86	2,329
Int. Customer Orientation	5,00 <sup>3</sup>	5,17	5,43 <sup>1</sup>	5,040**
Int. Customer Responsiveness	4,62	4,75	4,84	0,990

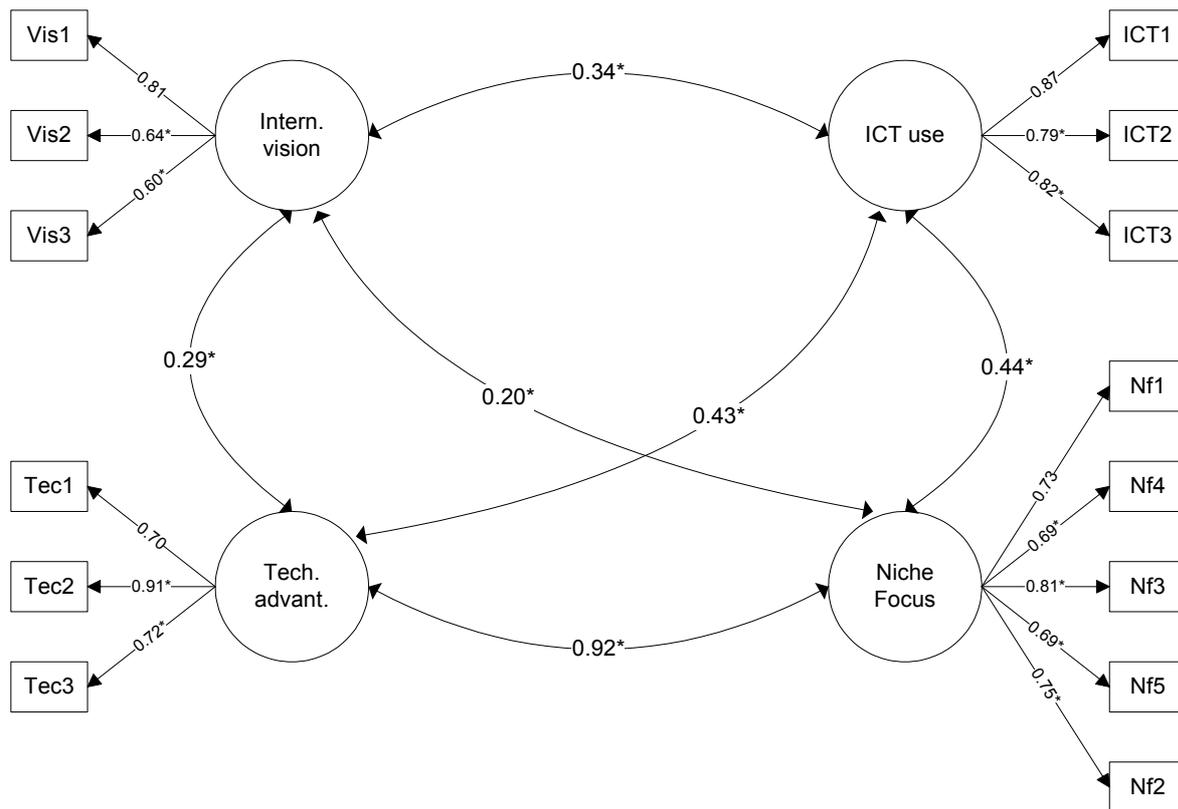
\*: p<0.05, \*\*: p<0.01, \*\*\*: p<0.001

1,2,3: denote significant group differences, Bonferroni test

In order to investigate the interaction of information and communication technology with other key variables, as well as the interaction between independent variables (hypothesis 4), the decision was made to use structural equation modeling. First, in order to validate the measures, confirmatory factor analyses in EQS was performed. As these variables had been found most important in their groups, one competitive advantage factor (technology), and one international orientation factor (vision) was included - in addition to *ICT-Intensity*. Following the results of Moen (2002) and Knight (1997), a niche focus strategy will often be important for small exporting firms, so, using the same measures as Knight (1997), a niche focus factor was included. 11

Subsequent to the development of the measurement model the structural equations model (SEM), which assesses the relation between factors, was tested. A two-step approach was used. First, all possible relations were included. Then, a Wtest, to ascertain the possibility of dropping parameters, was performed. As Bentler (1995) states, one then evaluates whether or not a given parameter seems to be zero in a population and determines if it can be dropped without losing model power. In the second step, non-significant paths may be eliminated from the model. Finally, the data is processed excluding the non-significant paths. However, no non-significant paths between the four key factors were observed, making the second step unnecessary. Figure 1 provides the results of the analysis of the structural equation model with standardized coefficients.

<sup>11</sup> When examining the data set, some of the variables skewed to the left, indicating non-normal distributions. Based upon the arguments presented by Sharma et al (1989), the ERLS model (elliptical re-weighted least square model) gives better solutions in non-normal distributions and equal solutions in normal distributions as the Maximum Likelihood (ML) procedure. Consequently, the ERLS-model was used in the analysis. No error covariances between scale items or cross-factor error covariances were allowed. All model parameters were significant, resulting in Chi-square=403, p<0.001 with 77 degrees of freedom. The Chi-square test is sensitive to sample size, so in large samples this test should be used mainly to compare different models (Byrne, 1994). The model statistics show: NFI=0.888, NNFI=0.890, RMSEA=0.12 and CFI=0.907. As the Comparative Fit Index (CFI) is less affected by sample size than the Normed Fit Index (NFI) and Non-Normed Fit Index, it is customarily recommended that one use the CFI (Bentler, 1988; 1990b). A CFI-value of 0.907 equals the recommended value of 0.90 (Bentler, 1995), indicating an acceptable overall measurement model fit.



**Figure 1: EQS model**  
**Chi.sq.=125.35, p<0.001, CFI=0.98, RMSEA=0.05.**

The model fit index showed: a CFI value of 0.984, NNFI=0.980, NFI=0.965 with model Chi-square = 125 and 71 degrees of freedom,  $p < 0.001$ , and RMSEA=0.05. The model is presented in figure 1. As indicated, active *use of information and communication technology* is related to the score on the three other factors, *technology advantage*, *international vision*, and *niche strategy*. Besides, *competitive advantage*, *export strategy* and the *international orientation* factors are related to each other. These results will be discussed in the next section.

### **Discussion**

In interpreting the results from this study it is important to bear in mind the limitations of the sample. It consists of firms that are small in size, operating in international markets; even if there are variations, all of these firms are niche-oriented. Consequently, on the market side, these firms face many small markets and often need sales in multiple countries to support their activities. The results support the hypothesis that ICT facilitates the process of identifying foreign markets and increases foreign market sales share. The finding that ICT-

intensive firms operate in more foreign markets and actually experience a shorter period from establishment to internationalization supports that conclusion.

The fact that this study failed to show market and price advantages for *ICT intensive* firms is intriguing, but not entirely unexpected. Previous research has shown that small exporting firms have a different competitive profile than larger firms (Moen 1999). Namely, compared to larger firms, small firms generally have competitive advantages associated with products and technology. This is a deed of necessity, since international new ventures especially rely on hybrid structures in their international work (Oviatt and McDougall 1994). Limited resources constrain full ownership of distribution and sales channels in international markets. Consequently, they might find it hard to develop market and price advantages. A second likely explanation is that the firms in this sample have not yet been able to establish their competitive market advantages as a result of ICT solutions. The data was collected in an early phase of the Internet's life cycle and the advantages of new sales and marketing systems take time to establish.

The major contribution of this paper is to establish how ICT interacts with other factors. Each of these relationships is commented upon in the next section.

*International vision vs. ICT-use:* The results on the relationship between international orientation and ICT were clear from the analysis. Firms with an international vision and with a strong focus on the customer in foreign markets used ICT to realize international expansion and increase communication with the market. However, the firm's ability to react to market communication did not improve with increased IT. This is a noteworthy observation and consistent with Mata et al. (1995) and Lucas's (1996) argument that ICT in itself does not bestow a competitive edge. It only does so when it is tuned with organizational routines. In firms where managers have a strong international vision, the use of ICT may be regarded as a key element in making it possible to expand activities in a number of countries, often involving geographical markets distant to the firm. At the same time, knowledge about other "international firms" may stimulate the international focus within the firm and strengthen the vision found among managers.

*Niche focus vs. ICT use:* Following the argument above, niche focus implies working towards fragmented markets. The use of ICT may be necessary in order to contact, motivate, sell, and

support customers worldwide, and the existence of ICT may make a niche focus strategy more attractive for the firm.

*Technology advantage vs. ICT use:* Firms with a high level of technological knowledge may be more able and willing to use information technology actively, while ICT may be used to strengthen their competitiveness. An example of this might be getting access to knowledge from partners or research institutions in various locations.

A strong international vision, technologically advanced products, and a niche focus are characteristics found among a number of newly established, international firms often described as "International New Ventures" or "Born Globals". These three characteristics are highly correlated with the active use of information and communication technology. Both Madsen & Servais (1997) as well as Knight & Cavusgil (1996) suggest that ICT is one of the important factors explaining the formation of these firms. ICT seem to be an effective tool in realizing management's visions for the firm in foreign markets, and it serves as a powerful tool to identify and act on profitable opportunities for the technology advantage embedded in the firm's value proposition. Through effective use of ICT, small firms seem to adopt an international strategy early on subsequent to firm foundation and rapidly increase foreign sales in multiple markets.

This study supports the idea that advances in ICT have played an important role in the growth of small international firms over the last decade. After examining the behavior of lead users of ICT among small firms, we can conclude that small ICT intensive firms have a greater propensity for export growth. As ICT today has become a customary tool of most small firms, it is also fair to assume that later adopters can take advantage of ICT as a low-cost gateway to internationalization.

The first advice from this study to practicing managers is to explore and make use of new advances in ICT. As we saw from the final model, ICT can play a vital role, interacting with many factors directly related to performance outcomes. However, it is important to note that simply installing the systems does not make the day. Information and communication systems need to be an integrated part of the business routines in order to be effective. If so, the use of ICT represents a tremendous opportunity for small firms to identify and exploit opportunities for international growth. Secondly, the advent of new information and communication

technologies has considerably lowered the costs and risks associated with international expansion. As a consequence, it would seem wise for firms possessing rare and valuable technological resources to consider international expansion strategies over diversification strategies in local markets. In that way, the firm could increase its rent on core technological resources.

For further research endeavors in the field of ICT and small firm internationalization, we suggest placing more focus on how managers in successful small international firms use other types of ICT tools to support their business concept. This study has focused on the role of basic Internet and e-mail applications in an early phase of small business ICT adoption. An interesting extension of this work would be to look into the role of virtual communities in small firm internationalization. Another interesting venue is to look at how ICT is integrated as a part of the small firms resource bundle to create sustainable competitive advantages in a longitudinal setting.

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## Appendix

Table A1: Items in Indices	Questions on...
ICT Intensity	<ul style="list-style-type: none"> <li>- extent of ICT use in communication with foreign agents †</li> <li>- extent of Internet usage in market research †</li> <li>- extent of ICT use for efficient foreign market management †</li> </ul>
Price Advantage*	<ul style="list-style-type: none"> <li>- procurement</li> <li>- access to raw material</li> <li>- efficiency of production</li> <li>- local pricing</li> <li>- efficient local advertising/marketing</li> <li>- local distribution</li> <li>- delivery on time</li> <li>- ability to deliver</li> </ul>
Marketing Advantage*	<ul style="list-style-type: none"> <li>- service and training</li> <li>- management, planning and organization</li> <li>- marketing</li> <li>- financing and economy</li> <li>- distribution</li> </ul>
Technology Advantage*	<ul style="list-style-type: none"> <li>- product features</li> <li>- technology †</li> <li>- product uniqueness</li> <li>- technology uniqueness †</li> <li>- product feature uniqueness</li> <li>- ability to deliver customized products</li> <li>- advanced technology †</li> <li>- emphasize uniqueness of product features</li> </ul>
International Vision	<ul style="list-style-type: none"> <li>- emphasize the importance of export to employees †</li> <li>- emphasize development of export-related resources †</li> <li>- regard the world as the market †</li> </ul>
Managerial Commitment	<ul style="list-style-type: none"> <li>- sufficient financial resources allocated to exporting</li> <li>- sufficient human resources allocated to exporting</li> </ul>
Int. Customer Orientation	<ul style="list-style-type: none"> <li>- export strategy based on knowledge of actual customer needs and situation</li> <li>- results depend on customer satisfaction</li> <li>- provide customers after sales service</li> </ul>
Customer Responsiveness	<ul style="list-style-type: none"> <li>- internal information about customer reactions</li> <li>- all employees understand how they can contribute to increased export</li> <li>- rapid reaction to negative customer reactions</li> <li>- frequent competitor analyses</li> </ul>
Niche Focus Strategy	<ul style="list-style-type: none"> <li>- uniqueness of product emphasized in int. marketing †</li> <li>- most important product is highly specialized †</li> <li>- uniqueness of product features †</li> <li>- targeting specialized needs that competitors find hard to meet †</li> <li>- product represents a new and innovative way of meeting a demand †</li> </ul>

\* The advantage items are asked in the manner: How do you compare to your most fierce competitor regarding...

† Items also in the structural equation model. Mark: In the technology advantage index, not all items are used in the model due to low factor loadings in the confirmatory factor analysis.