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Life cycle and internationalization of Finnish software product companies

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ABSTRACT

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Software industry has continued its growth after the dramatic growth period in the 1990s. Hard competition, rapid sales growth, strong performance in international markets and low barriers to entry are the characteristics of software business. Therefore the life cycle of the software company is also often shorter and distinguishable from other, more traditional companies' life cycles. Internationalization of a company can be seen as a consequence of general globalization and small domestic markets. On the other hand, it can also be considered as a part of company's natural growth process.

The aim of this thesis was to explore existing theories of company life cycle and internationalization process through literature research and further, to question whether they can explain the life cycle and internationalization process of Finnish software product companies. Empirical part of the study was conducted as a case study by evaluating three Finnish software product companies.

The case companies were analysed and it was found that due to unique characteristics of software business, general company life cycle models cannot be well adapted. I.e. the growth through internationalization or the possibility of internationalization is not addressed at all in the majority of the existing life cycle and growth models. Based on these findings, a modified model is proposed to illustrate the life cycle of Finnish software product companies. As the case study showed that there is no common (linear) pattern within companies, the proposed model shows possible situations that software product company may face during its life cycle.

KEYWORDS: software business, software product company, company life cycle, internationalization process

TIIVISTELMÄ

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Tutkielma

Ohjelmistoteollisuus on jatkanut kasvuaan 1990-luvun dramaattisen kasvun jälkeenkin. Kova kilpailu, nopea myynnin kasvu, vahva esiintyminen kansainvälisillä markkinoilla ja matala kynnys alalle ovat ohjelmistoliiketoiminnan ominaispiirteitä. Siksi myös ohjelmistoyrityksen elinkaari on usein lyhyempi ja se erottuu vanhempien alojen yritysten elinkaarista. Yritysten kansainvälistyminen voidaan nähdä globalisaation ja pienten kotimaan markkinoiden seurauksena. Toisaalta kansainvälistymistä voidaan pitää myös osana yrityksen luonnollista kasvuprosessia.

Tässä tutkielmassa tarkasteltiin nykyisiä yrityksen elinkaariteorioita ja kansainvälistymisprosesseja kirjallisuuskatsauksen kautta. Tutkimuksen tarkoituksena oli selvittää pystyvätkö teoriat selittämään suomalaisten ohjelmistotuoteyritysten elinkaarta ja kansainvälistymisprosessia. Tutkielman empiirinen osa toteutettiin tapaustutkimuksena arvioimalla kolmea suomalaista ohjelmistotuoteyritystä.

Tapaustutkimuksessa käytettyjen yritysten analyysissä huomattiin, etteivät perinteiset elinkaarimallit sovi kovinkaan hyvin omalaatuiseen ohjelmistoliiketoimintaan. Suurin osa elinkaari- ja kasvumalleista ei huomioi kasvua kansainvälistymisen kautta tai edes kansainvälistymisen mahdollisuutta. Näiden löydöksien pohjalta on muokattu malli, joka esittää suomalaisten ohjelmistotuoteyritysten elinkaarta. Koska tapaustutkimus osoitti, ettei yritysten välillä ole yhteistä lineaarista kasvukaarta, esittää muokattu malli mahdolliset vaiheet, joita ohjelmistotuoteyritys voi kohdata elinkaarensa aikana.

AVAINSANAT: ohjelmistoliiketoiminta, ohjelmistotuoteyritys, yrityksen elinkaari, kansainvälistymisprosessi

CONTENTS

1 INTRODUCTION

This chapter provides the reader with the background information of this thesis. The research objectives and the scope of research are presented. The research methodology and the key concepts are discussed and the chapter concludes with an outline of the thesis.

1.1 Background

While information technology is inherently global by nature transcending national boundaries, the barriers to enter international marketplace are collapsing. Software industry experienced a dramatic growth worldwide in the 1990s and has given birth to a large number of companies in a short time period (Nambisan, 2002). Software product companies are marketing their products to world markets and thus competing internationally (Hoch et al. 2002). Software companies however, as many other high technology companies, often possess limited capabilities and resources, and the success and growth of these companies may depend on their ability to internationalize their operations (Coviello & Munro 1997).

Internationalization theories give very systematic picture of internationalization, as it would be a very simple, logical and especially systematically proceeding process. Unfortunately, reality is quite different. Global markets are not easy to enter and management has to make many difficult decisions before the internationalization really happens. The lack or over-flow of knowledge makes decision-making situations tough. Sometimes the decision is done between two contradictory options, and a trade-off between them is needed. General company growth models may become in assistance when dealing with tough decision-making and choosing right paths, also in regard to internationalization decisions. (Ahokangas & Pihkala 2002, 84)

Company development has been researched from various viewpoints in the last four decades. Different life cycle and growth stage models focus mostly on the internal dynamics of the company and they suggest organizations to progress in a steady and conventional manner. It is normal that different managerial challenges occur as the companies move along the stages. The life cycle theories draw the growth pattern and consider the influence of a variety of attitudinal aspects on the evolutionary development. (Nambisan 2002, 143)

Company growth and evolution theories can be divided in four main groups: the industrial economics approach, the stochastic model, the stage model or the life cycle model, and the strategic management approach. In this study the stage model/ life cycle model approach is reviewed. This study refers to life cycle and growth models which are suitable for all types of businesses while focusing on the models concentrating on high-technology enterprises. Greiner (1972) and Scott and Bruce (1987) have developed organizational growth models which give a picture of the business activities of companies. These models concentrate mainly on different problems that companies face and on the business activities and marketing behavior of the small business owner-manager. Churchill and Lewis (1983) have also developed their five-stage model, which is arguably one of the best known; it reflects a wide range of SME development. (Hill, Nancarrow & Wright 2002, 362)

Software industry's vitality and propensity for innovation is seen in the saying that all you need to enter the software industry is an idea and a computer. Software industry is characterized by hard competition, wide mixture of companies, rapid sales growth, high rates of commercial innovation, strong performance in international markets and low barriers to entry. (National Research Council Staff 1991, 3)

Guiding an organization through the growth process is a managerial challenge. This is especially the case in the high-technology business such as software

business, where the company can grow from start-up to maturity in a few years. Whether a start-up or an older company, they must face the crises related to growth earlier and faster than in less volatile environments in order to remain in the game. (Hanks, Watson, Jansen & Chandler 1993, 141) Uniqueness of high-technology as well as software business has also been considered in some company life cycle models. Therefore the models for high-technology ventures by Kazanjian (1988) and Galbraith (1982) as well as Nambisan's (2002) software company evolution stages have been included in this study.

According to Lu and Beamish (2002), company growth is an important dimension of company overall performance, especially for SMEs. Due to the general globalization and competitive situation many companies can no longer focus solely on the domestic market. Despite the many challenges in the international arena, companies selling in global industries have no choice but to internationalize their operations in order to survive and grow. On the other hand, Äijö (1998, 28-29) considers internationalization a natural consequence in company's growth process. For starting international operations, there should be significant benefits for a company. A need for an international expansion is created when profitable growth in international markets looks easier than growth in the domestic market. Regardless whether internationalizing by necessity or a desire, it is important to understand the process of internationalization and the influence that internationalization has on growth of a company. International growth can offer Finnish software product companies unlimited opportunities and therefore it is important to research how they can grow through internationalization.

Several approaches have been suggested to explain the internationalization process of individual companies. Most typically, the internationalization process of a company has been explained in terms of he Uppsala model, also known as (one of the) stage model(s). The model maintains that learning and

commitments regulate the internationalization process and that companies proceed gradually making commitments first to nearby markets to gain market specific knowledge. The Uppsala internationalization theory has its roots in industrial organization and economics, and has been developed in the 1970s and 1980s (Johanson & Wiedersheim-Paul 1975, Johanson & Vahlne 1977). Since then, the world has changed rapidly in many ways. Due to the changes, critical assessments to whether these traditional theories are still able to grasp the internationalization practices of today have arisen (i.e. Forsgren 1989, Bell 1995, Coviello & Munro 1997). It is argued that the Uppsala model fails to explain the born global phenomenon, i.e. companies that go international at or near establishment (i.e. Oviatt & McDougall 1994, Knight 1996). It is also claimed that the model does not take into account the importance of the networks in which companies are embedded in the process of internationalization (Johanson & Mattsson 1988). However, the Uppsala model of internationalization has been early basis for the newer internationalization process theories such as the Network Model of Internationalization and the International New Venture theory that have been prompted by the criticism towards the model.

The majority of the existing life cycle and growth models do not address the issue of growth through internationalization or the possibility of internationalization at all. McHugh's (1999) software company growth model is one of the rare frameworks which includes both growth and internationalization aspects within the company life.

1.2 Research problem and objectives

Even though each business is unique, the problems and the managerial factors they face are very similar within companies operating in the same business domain. Life cycle and growth stage models can help managers, consultants and investors to better understand development aspects and prepare companies for the future. (Churchill and Lewis 1983, 50) As for some

industries, internationalization is no longer a matter of choice but a necessity for survival, internationalization is an integral part of company growth. Therefore, the objective of this thesis is to understand the life cycle and growth through internationalization of Finnish companies operating in the software product business. The research question addressed in this study is: *what is the life cycle and the internationalization processes of Finnish software product companies?*

To answer the question, the following sub-questions were formulated:

- What are the generic company life cycles and can they explain the life cycle of Finnish software product companies?
    - When do Finnish software product companies grow?
- What are the general internationalization theories -do Finnish software companies internationalize according to these theories?
    - When do Finnish software product companies internationalize?
- How does the context of the industry affect the growth and internationalization of these companies?

This thesis attempts to provide answers to these questions by reviewing existing literature on general company life cycle and internationalization theories and on software company specific studies. The aim is to propose a more detailed model of the life cycle of Finnish software companies based on the literature review and the analysis of the case companies.

1.3 Research focus

There are several theories examining internationalization and company evolution. The theoretical framework has been created on the basis of generic life cycle and growth models and the process of internationalization at the level of a company.

As most of the Finnish software companies are known to be small to medium sized, discussion of life cycle and internationalization models in this thesis covers aspects of general theory (including discussion of both large and small companies), while focusing in particular on small and medium sized company's life cycle and internationalization process.

This thesis is written as a part of the Frisbee project conducted by Software Business and Engineering Institute of Helsinki University of Technology. Therefore, the focus of the research is on the software industry. Focusing on a single industry gives the possibility to also control the potential effects of an industry. Even though the Finnish software industry is small, it is an increasingly important sector to the development of the Finnish high-technology field and to the overall Finnish economy. Based on this, specific interest is given to the company life cycle models developed for high-technology ventures or software businesses. In addition, some studies investigating the applicability of internationalization models in the context of software business are discussed in this thesis.

1.4 Research methods

The case study method was chosen for this study as it is best suited for investigating "why" and "how" questions. Yin (1984, 23) defines the case study research method as an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used. The comparative case study method (multiple-case study) is used to compare a phenomenon studied in different cases in a systematic way, to explore different dimensions of the research issue or to examine different levels of research variables (Ghauri & Gronhaug 2002, 173).

The case study analysis has been conducted in two parts. The first part deals with development of the case companies. Several key dimensions from the

reviewed life cycle theories are used for analyzing the case companies. Cases are compared to reviewed life cycle models to find similarities or possible common patterns. The analysis of the internationalization process has been conducted by focusing on the following factors: the timing of internationalization in respect to the company life cycle, the speed of internationalization, the reasons for international expansion, the meaning of psychic distance and the importance of networks. The findings of the case studies are also evaluated against the internationalization theories presented to see if the internationalization process of the case companies goes according to any of the theories and if the process could be generalized to cover other Finnish software companies too.

1.5 Key concepts

Life cycle of a company has often been compared to the similar of a human being. (Viitala & Jylhä 2004, 195) Life cycle model is valuable for the managers of growing companies. As organizations grow, their complexity increases. Life cycle model is like a road map, which identifies critical organizational shifts along with the possible crisis points, which company should avoid. Life cycle model at its best provides information about when adding management levels, formalizing organization structure and systems. It surely helps managers to know when to let go of old strategies and management styles, which are only holding back the growth of the company. Value of life cycle model especially for the new-venture companies struggling with their start, could be significant. (Hanks et al 1993, 25)

Internationalization has been defined in many ways over the years. One way of defining it is as "a process of increasing involvement in international operations" (Welch and Luostarinen 1988, 36). Czinkota and others (1996, 4) define it in turn as consisting of "transactions that are devised and carried out across national borders to satisfy the objectives of individuals and

organizations". These transactions can take various forms, such as export-import trade and franchising or foreign direct investment and joint ventures. The latter one is a useful generic view of internationalization which emphasizes the importance of exchanges and transactions occurring across borders in an international or global context. The process of internationalization, in its widest sense, can be understood to include any or all of the activities mentioned above. Internationalization does not always have to be a forward progression as a company may i.e. drop a product, withdraw international investments and reduce international operations or withdraw from international operations altogether for various reasons (Chetty & Campbell-Hunt 2003, 6).

SME stands for small and medium sized enterprise. European Union defines it as a enterprise with less than 250 employees and an annual turnover less than 40 million euros, small company is defined as an enterprise which employs fewer than 50 persons and whose annual turnover does not exceed EUR 10 million (European Union, 2003). Another definition of small business by American Committee for Economic Development includes following matters: management is independent, owner is often also a manager; capital is provided and ownership held by a single person or a small group; operations are mainly local, but markets may be broader than that (in Scott & Bruce 1987, 46).

1.6 Structure of the thesis

The second chapter introduces software industry and, more precisely, the software product business both world wide and in Finland. Chapter 3 describes the theories of company life cycle and justifies the selection of some models for this thesis. Chapter 4 gives an overview of the three theories of internationalization on which this thesis is built. The overviews are done by reviewing existing literature. In chapter 5 the concept of growth is further defined and software company specific studies are reviewed. Chapter 6 introduces the empirical research setting. The case companies are introduced in

the following chapter 7 and together with chapter 8 case analysis, it forms the empirical part of this paper. The chapter 9 presents a proposed life cycle of a Finnish software product company, which is based on the findings from literature and the case studies. Finally, chapter 10 concludes the thesis, outlines the contributions and managerial implications. The limitations of the study are discussed and further research proposed in the final chapter. The structure of this thesis is depicted in the FIGURE 1 on the following page.

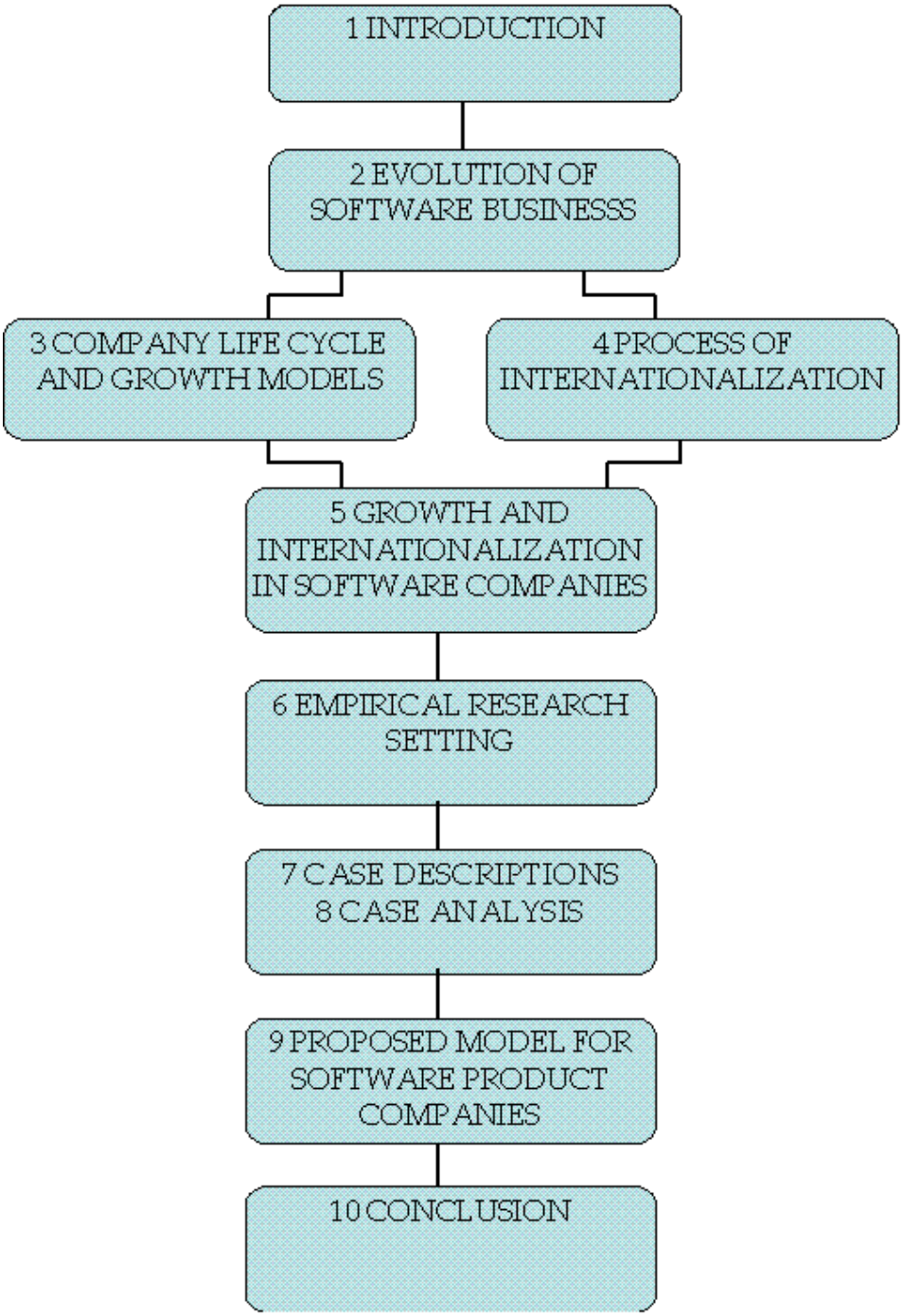

FIGURE 1 Structure of the thesis.

2 EVOLUTION OF SOFTWARE BUSINESS

This chapter introduces general development of software business worldwide, providing also specific details about software business in Finland.

2.1 Software industry worldwide

The history of software industry dates back some 50 years. The business has unfolded in stages as first came the customer tailored software projects, secondly appeared the independent software products and third, enterprise solutions developers arise. The latest stages can be characterized by the emergence of the mass market software products and internet value-added services (Hoch et al, 2000).

Especially during the 1990s the software industry grew and internationalized rapidly (Alajoutsijärvi et al, 1999). The number of software companies has risen from few service ventures in the 1950s to tens of thousands (approximately 35 000 in year 2000 with more than five employees) software service and product companies worldwide (Hoch et al 2000). The market is dominated by large US corporations, the US industry accounts for about 75 percent of the whole software market. The share of European software producers is circa 20 percent and it is growing steadily. Most European software companies are relatively small and concentrate solely on serving their domestic markets.

The low entry barriers to the field have been the biggest influence in the rapid emergence of new software companies. In the industry, knowledge is far more important than cash and equipment. Besides the low financial requirements, high innovation rates have lowered the entry barriers even further. (Hoch et al 2000, 39)

The evolution of software industry can also be seen in the industry segmentation. There are two main business types, the (professional) software services and software products (see FIGURE 2). The latter can be further divided into two segments, enterprise solutions and mass-market packaged software products (Hoch et al 2000, 38).

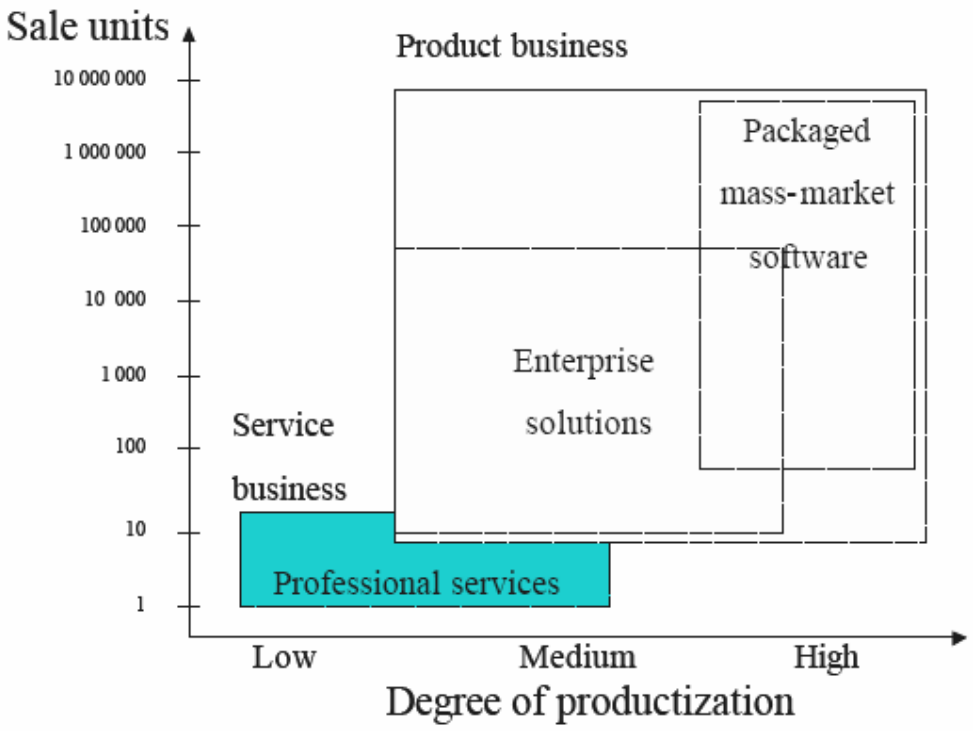

FIGURE 2 Software industry segmentation (McKinsey 1999 in Hoch et al 2000, 34).

Most revenues for a software product company come from standardized offerings usually sold to new customers or old customers with new contracts. Revenues primarily come from software license fees. Software companies that sell to enterprises generally offer a combination of standardized products sold through software licenses and services with maintenance sold through multiyear contracts. The service companies get most revenues from special

products or projects (customization) and other work like consulting, training, system integration, technical support, enhancements, contracted upgrades tailored for new and old customer – revenues typically come from long-term contracts. In 2001 of the world wide revenues 1/3 came from products and 2/3 from services. North America dominated the market with 50%, Europe 30% and Asia 15%. (Cusumano 2003, 49)

2.2 Software product business

The Finnish Software Business Cluster uses a little bit different classification for software products than Hoch et al (2000). According to the association (2005), the product offerings of the software industry can be roughly divided into three categories: software products, customized software, and embedded software. Software products differ from customer tailored software and embedded software in the object of trade and degree of productization. Main characters of software products are:

- *Software products are traded on their own, not as part of other products. Although software product business often includes other things, such as installation, training, and even customization, the main object being traded is software.*

- *Pure software products are highly productized and often referred to as packed, mass-market, or shrink-wrap software. These kinds of products are delivered to a large number of customers in exactly the same format – without any customer tailoring.*

(Source: Finnish Software Business Cluster, 2005)

Followed from earlier categorizations of software products, software product companies can be defined as companies that sell software products they design, implement, and maintain.

Another determination of a software product is given by Nambisan (2002). Nambisan (2002) classifies software products into two categories, based on their product scope and degree of innovativeness. Minor software product is characterized by incremental innovation and it carries out minor tasks or complements bigger software products. Minor software products often include software utilities, tools and add-ons, which extend existing features of a product or provide specialized services. Major software products involve radical innovations instead of incremental. They are comprehensive in scope, serving multiple tasks, and are often stand-alone products. For example, minor software product can be an add-on for Microsoft-Excel or Word, and major software product can be an Internet browser, or enterprise resource planning (ERP) solution. (Nambisan 2002, 147)

According to Hoch et al (2000, 38), although software products and software services businesses share some common ground, there are many aspects that are different, including cost structure, demand volume, competition intensity, geographic presence and relationships management. These aspects affect the management of software companies. (Hoch et al 200, 38)

As in any other business, also within the software business there are mass-market companies and companies that are niche oriented. Selling effectively to different types of customers requires very different strategies and organizational capabilities. Some segments have less competition and are more profitable than others. Software businesses also have to choose a product strategy. According to Cusumano (2003), the choices are to target a broad set of customers with a horizontal offering or focusing on specific industries or applications, the vertical market segments. By horizontal Cusumano means a potential market that covers most or all PC users, regardless of their industry or functional specialization. Vertical, on the other hand, means a market that lies in a specific domain. Domain may consist of an industry (i.e. application for a health care industry, tailored to requirements), a technical specialty (computer-

aided design programs), a technical specialty for specific industry (computer-aided design for construction engineers) or a platform-specific market (application for particular operating systems). Thus, following from this, horizontal segments are more likely to be mass markets. (Cusumano 2003, 51-53)

2.3 Software business in Finland

Although grown rapidly during the 1990s, the Finnish software industry is still relatively small. The industry consists of about 1100 companies and the revenues in 2003 were about 1 billion Euros (Ohjelmistoyrityskartoitus 2004). These companies are mostly owned by the founders of the companies and their family members, with only minor external ownership. The software product business covers about 30 percent of the whole software business cluster's revenue. (Finnish Software Business Cluster, 2005)

According to a yearly study (Ohjelmistoyrityskartoitus 2004), about 80 percent of the Finnish software product companies are located in growth centres and in close proximity of universities and technology centres. The average age of Finnish software product companies in 2003 was 10 years and a quarter of the companies employed less than five people.

"*Despite the challenging economic situation that started in 2000, Finnish software product companies have been able to adjust to the weakened economic situation. As companies are rather small, their capability to modify business operations in a short-term in order to keep the business running is relatively good. As the downturn of the economy makes growth intentions more difficult, it also forces companies to improve their processes and efficiency.*" (Finnish Software Business Cluster, 2005)

Small companies are even reported to make more profit in 2003 than before (Ohjelmistoyrityskartoitus 2004). It has also been reported that Finnish software producers have increased their exports by 40% annually since mid 1990s

Nowadays about 50 % of software companies have some international revenue, international sales on average 30 % of the total turnover. (Alajoutsijärvi et al 1999)

According to the software industry study in Finland, small software companies can benefit from the growth of the industry through increased internationalization. Internationalization together with productization is actually seen as a key prerequisite for continued growth in the software business. Development of network relationships is also seen as important. Most of the Finnish software companies are still in the beginning of their internationalization process, but there are also some companies that are very international. On average, companies had international operations in 6.3 countries and the most common destinations for international expansion are the USA, Sweden and Germany. The most used modes of internationalization seem to be direct exporting and use of foreign distributor or agent. (Ohjelmistoyrityskartoitus 2004)

Nambisan (2002) notifies market globalization and dispersed value chains as important management issues in software industry. The software industry has been at the forefront on these both management challenges, whereas other high technology industries have started these issues somewhat later on. Software companies have easily adopted the challenges of designing and developing products for global customers. Compared to other high-technology companies, software companies have the most spread value chains. The value chains of software companies can often cross national boundaries with conceptualization, design, development, and marketing of a product being conducted in different countries (Nambisan 2002, 146).

3 LIFE CYCLE AND GROWTH MODELS

This chapter provides description of a company life cycle. It also introduces different company life cycles and stage models, along with their stages and different variations of them. Life cycle models by Greiner (1972), Churchill & Lewis (1983), Scott & Bruce (1987) are introduced as generic company life cycle models. There are also life cycle models which are specifically developed for high-technology companies and therefore models of Nambisan (2002), Kazanjian (1989) and Galbraith (1982) are also introduced in this chapter.

Models by Churchill and Lewis (1983), and Scott and Bruce (1987) are included in this review because they concentrate only on small business growth and are both well-known life cycle models. Kazanjian (1988) and Galbraith (1982) are included because of their special character; being developed in a high-technology setting, making it important for this study of software companies. Nambisan's (2002) growth model is developed for software business and is therefore included.

3.1 Introduction to company life cycles

Company's life consists of a development phases which follow similar pattern than human beings life cycle. At first business is small, and then it grows and develops, eventually matures and at some point dies away. Company's life cycle has many growth phases, which all are different with their specific features. Before entering the next phase, company must pass a step, which often includes some kind of crisis. The more company is prepared to this crisis less painful is getting over it. These crisis points are crucial, because they can turn company's development down, make the company regress or at the worst, put it out of business. (Viitala & Jylhä 2004, 195)

Several researchers have developed business life cycle models explaining business growth. When developing a life cycle one has to categorize the

problems and growth patterns of small businesses in a systematic way that would be useful to entrepreneurs. Small businesses vary broadly in size and in their capability for growth. They are characterized by independence of action, differing organizational structures, and varied management styles. But when looked closer, small companies do suffer from same type of problems in similar stages in their development. The similarities found are gathered together to create a framework. (Churchill and Lewis 1983, 30)

Smallbone, Leigh & North (1995) state in their study that the growth of the small and medium-sized enterprises (SMEs) can be explained with a range of factors affecting it, and these factors can interact with each other in different ways in different circumstances (Smallbone et al 1995). SMEs growth can also be examined from various aspects. Gibb and Davies (1990) refer to four types of approaches in their review of academic life cycle approaches: personality dominated approach, business management approach, sectored and broader market-led approach, and organizational development approach (e.g. Churchill and Lewis' model) (Gibb and Davies 1990, 16-17).

Over the years many models of organization growth stages have been proposed. However, previous literature reviews by Hanks, Watson, Jansen and Chandler (1993) as well by Miller and Friesen (1984), can be in great help when comparing the life cycle models. Hanks et al (1993) conducted a taxonomic study to figure out underlying construct of a life cycle stage and to develop an empirical taxonomy of life cycle stages in high-technology companies. The results of the study provide general support for the proposal that life cycle stages could be defined and operated as unique configurations of organization context and strategy. **(**Hanks et al 1993)

Miller and Friesen (1984) developed summary model of previous life cycle models. They studied company life cycles using the methods of longitudinal analysis. They wanted to explore the organizational stages, establish a natural

order of the stages and describe their features of strategy, structure, environment and decision-making style. Historical evolution of several companies was analyzed and classified into five life cycle stages. Previous theorists studying life cycles suggested that companies tend to move in a linear progression through five development stages. Among other results, Miller and Friesen (1984) showed that companies do not go through stages in the same linear order. (Miller & Friesen 1984, 1161)

There are different types of company life cycle models are introduced. Some models are referred as stages models, others growth or development models. Several similar terms are also used overlapping in life cycle theories. Some authors talk about life cycle stages, others about growth stages or developmental stages. Eggers, Leahy and Churchill actually state the differences in their study saying that the life cycle stages are more like phases of common conditions which management faces in growing organizations; therefore stages should be referred to "Phases of Management" rather than "Stages of Growth" (Eggers, Leahy & Churchill 1994, 12). Here in this study all of the above mentioned terms are used simultaneously to describe the subsequent stages of company development.

The software industry is one of the fastest growing business areas throughout the whole world. Looking back to business history, one has to admit that the software industry has given birth to the history's largest number of companies in the shortest period of time. This fast growth rate has also raised a plenty of interesting management issues related to firm growth and evolution. Therefore the business life cycle models are reviewed also in the context of software business.

Development curve of technology companies has traditionally followed three phases: rising phase (nousuvaihe), shakeout of companies (yritysten uloslyönti), and customer orientation (asiakassuuntautuminen). Development of

technology-based companies is usually very fast in the beginning and number of market entries is high. The curve has been called S-curve, but the shape of it now reminds more of an ice hockey stick. At first there is short development phase of new technology, and after that market starts rapid growth. Only the ones entering the market at the right time with the right product succeed in this rising phase. Shakeout phase means tightening competition and mergers where only the healthiest companies survive. In customer orientation phase companies notice the customer and their needs and start offering added value products to them. (Viitala & Jylhä 2004, 199)

Guiding an organization through the growth process is a managerial challenge. This is especially the case in the high-technology business, where the firm can grow from start-up to maturity in a few years. Crises related to growth must be faced earlier and faster than in less volatile environments. (Hanks et al 1993, 141)

According to Nambisan (2002), the software industry is considered as typical high-technology industry, which is characterized by innovation-driven market growth, swiftly shrinking product and technology life cycles, high knowledge intensity, and global markets. Software industry can be seen as a predecessor in the area of high-technology since many of the typical characteristics tend to appear first in the software industry. (Nambisan 2002, 142) Some of the life cycle models refer to high-technology companies. Since the characteristics of software business are similar to other high-technology businesses, these models are applied here for software business.

3.2 Stages of company life cycle and development

Review of recent life cycle literature shows that there is quite a broad range in the number (from three to ten life cycle stages) of stages identified by different theorists. Few literature reviews conducted collect the life cycle models together and try also to identify the general number of stages.

Hanks et al (1993) say that organizations are generally theorized to evolve through five general stages: Start-Up, Expansion, Maturity, Diversification, and Decline. On the other hand, in their own study Hanks et al. (1993), state that derived configurations suggest a sequence of four growth stages: start-up, expansion, later expansion/early maturity and maturity/diversification. (Hanks et al 1993, 11-12)

According to the review of corporate life cycle theories of Miller and Friesen (1984), theoretical literature of life cycles seems to show roughly five life stages. The stages are as follows (Miller and Friesen 1984, 1162):

- **The Birth Phase** - Young struggling firms, just starting their business, dominated by their owners, have simple and informal structures.

- **The Growth Phase –** Company has established its distinctive competences, has had some initial product-market success, trying to achieve rapid sales growth, usually a functionally-based structure is established, some delegation in authority, formalized procedures.

- **The Maturity Phase –** Sales level has stabilized, innovation is falling, and bureaucratic organization structure is established. Company targets for smooth and efficient functioning.

- **The Revival Phase –** Product-market scope is diversified and expanded. Company is trying to survive in more complex and heterogeneous markets by adopting divisionalized structures, and more difficult controlling and planning systems.

- **The Decline Phase –** "encroaching stagnation", markets dry up, company declines with them, external challenges and lack of innovation make the profit drop.

Miller and Friesen (1984) have also classified the life cycle phases with the following criteria presented in TABLE 1 below.

TABLE 1 Criteria for life cycle phases (Miller & Friesen 1984, 1166).

Phase	Criteria
Birth	Firm is less than 10 years old, has informal structure, and is dominated by owner-manager.
Growth	Sales growth greater than 15%, functionally organized structure, early formalization of policies.
Maturity	Sales growth less than 15%, diversification of product-lines, divisionalization, use of sophisticated controls and planning systems.
Decline	Demand for production levels off, low rate of product innovation, profitability starts to drop off.

3.3 Greiner: evolution and revolution as organizations grow

Greiner's model of crises in company's development is very simple and a bit old-fashioned description of companies' development. It does give an idea of companies' evolution and helps understanding their differences. (Viitala & Jylhä 2004, 201)

Greiner's (1972) evolution and revolution model is one of the best-known life cycle models. It suggests that organizations grow through five evolutionary stages, which are separated by short periods of "revolution", or dramatic organizational change. Greiner's model (1972) is included in the study because it serves as an important baseline model in the field. (Hanks et al. 1993, 6)

By the terms evolution and revolution Greiner means the following. Evolution is a longer period of time in the growing phase in company's life cycle, when

nothing major happens in organization practices. Revolution on the other hand, is a period of time when major changes occur in organization, it is a crisis, resulted from previous evolution time. Management's abilities to solve each revolution phase or crisis determine whether company will continue its evolutionary growth and move into the next level.

Management needs to know its own organization's history, so they can anticipate and prepare for the next developmental crisis. Company can learn about themselves a lot just simply asking: where have we been, where we are now and finally where are we going. Greiner's (1972) opinion is that organization's history determines its future more than any outside force. Greiner uses psychological studies to back up his opinion. Psychologically individual's behavior is determined by previous events and experiences, not by what is in the future. Greiner shows how each stage of evolution breeds its own revolution and how management solutions to each revolution determine the next stage evolution. (Greiner 1972, 1-2)

Greiner's organizational development model is built with five dimensions essential to it. These dimensions are next shortly described.

1. Age of the organization is the most obvious and essential dimension for the development model. Same organization practices are not maintained for a very long period of time. This can be concluded that management problems and principles are rooted in time. (Greiner 1972, 2)

2. Size of the organization. Increasing number of employees and sales volume, change also company's problems and their solutions. Increased size brings along the problems in coordination and communication, multiplied hierarchy levels and more interrelated jobs. (Greiner 1972, 2)

3. Stages of evolution. After surviving the crisis, company's evolution phase lasts from four to eight years. This period is continuous growth when only modest adjustments are made for maintaining the growth. (Greiner 1972, 2)

4. Stages of revolution. Quiet evolution phase ends with a revolution. Revolution is caused by the management style, which has become unsuitable; this turbulent time is full of remarkable changes. To get over the crisis and move on to the next evolution period, management must find a new better way of organization practices, which become the basis of management for the next evolution period. Ironic is, that a major solution for the current evolution turns out to be the major problem later on. (Greiner 1972, 2-3)

5. Growth rate in the industry. The speed of the evolution and revolution phases depends on the market environment of the industry. Fast-growing industries have shorter evolutionary periods than mature or slowly growing industries. Rewarding and successful industries also enable longer evolution phases and delayed revolution. In these business areas company's mistakes can be hidden into profit and loss statements. Even though mistakes are made, money is still coming in and it covers the loss and delays revolution. But there are still underlying problems, which will later on cause unavoidable revolution. On the other hand, companies in poor market environments seem to suffer from more severe and difficult revolutions. (Greiner 1972, 3)

3.3.1 Phases of Growth

> *"Each phase is both an effect of the previous cause and a cause for the next phase.(*Greiner 1972, 3)"

Each evolution phase has its unique management style. Eventually this management style becomes a problem; it is old and does not work anymore. Solution is a new management style which will be used for the next evolution phase. And as in the earlier evolution phase, later on this new management

style develops to be a new crisis. Company cannot return to previous phase's management styles, new styles must be adopted so that company can move into the next growth level. Each of the five stages is described in the following part and pictured in FIGURE 3. (Greiner 1972)

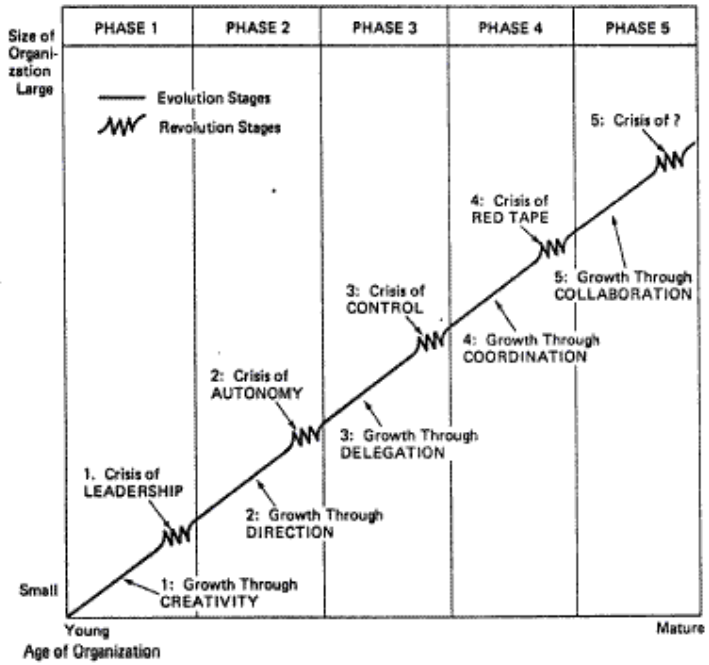

FIGURE 3 Five phases of growth. (Greiner 1972)

Phase 1: Creativity & the leadership crisis. The founders of the company emphasize creating both a product and a market. They usually neglect all management tasks, working long hours and focusing only on the product. Company's actions are informal, communication is frequent and salaries modest and full of promises from better future. (Greiner 1972, 3-4)

Crisis: Leadership is nonexistent and therefore company runs into its first crisis. Individualistic and creative activities are needed when starting a company, but a developing company with growing production needs knowledge about efficient manufacturing. Also communication needs to be organized, incoming money problem must be solved and an accounting system is needed. Founders of the company are reluctant to hire a business manager and try to manage without him. Only solution to this first crisis is to find a strong manager who is suitable both for the company and its founders. (Greiner 1972, 3-4)

Phase 2: Direction & the autonomy crisis. After hiring a capable business manager, company moves into period of sustained growth. New organizational functions are taken into use. Company is more formal in areas of manufacturing, marketing, accounting and communication. Hierarchy starts building up and job assignments become specialized. (Greiner 1972, 4)

Crisis: Lower management has better knowledge of things than higher management. Rules and regulations frustrate the lower managers and they start making their own decisions, and demand greater autonomy. Company needs to start delegating tasks to solve this crisis. (Greiner 1972, 4)

Phase 3: Delegation & the control crisis. As a result of previous crisis, decentralized organization structure is applied. Higher management delegates decision-making to lower levels, and their communication is brief and formal. Bonus system and profit centers are established. Motivation grows in lower management levels. They have own decision-making power and added responsibility. (Greiner 1972, 4)

Crisis: Too much freedom is not so good either. Higher management realizes that it is loosing the power and the control. Field managers are enjoying their freedom and run their own departments without coordination and a thought of what is good for the whole organization. Special coordination techniques are applied. (Greiner 1972, 4)

Phase 4: Coordination & the red-tape crisis. This phase consolidates the organization. It involves better coordination, where upper management is responsible for administrating new formal coordination mechanisms. Characters of this phase include merging decentralized units into product groups, which are then treated as investment centers responsible for their outcome. Also formal planning procedures are established. Profit sharing and stock options are used as encouragement. Coordination systems help to allocate company's resources better. Field managers still have decision-making responsibility, but they have also learnt to see beyond their own needs. (Greiner 1972, 4-5)

Crisis: Watchdog control becomes too much. A lack of confidence grows between line managers and staff, as well as between headquarters and field. Company has become bureaucratic paper system where is no room for innovation. Company has grown too large to be controlled with formal and strict managing methods and systems. Interpersonal collaboration becomes a solution for this crisis. (Greiner 1972, 5)

Phase 5: Collaboration & the ? crisis. In this stage company has more flexible and behavioral approach to management. Greater spontaneity is emphasized. Formal control is left behind, as social control and self-discipline take over it. Team work is used for quick problem solving, number of experts is reduced. The experts are moved to work as consults, not leaders. Matrix-type structure is used for finding right teams for right problems. Educational programs for managers to help them with team skills and solving conflicts. Real—time information systems are taken into daily activities. Economic rewards are offered for the best teams. (Greiner 1972, 5)

Crisis: What will be the crisis after this phase? Greiner assumes that the crisis evolves around "psychological saturation", meaning burn out caused by the intensive team work and pressure to always find innovative solutions. Greiner

suggests as a solution to this crisis, new structures and programs, which let the employees periodically to rest, reflect, and revitalize themselves. He has ideas about having two structures, a habit structure for daily work and a reflective structure for stimulating perspective and personal enrichment. Then employees' could move between these two structures. (Greiner 1972, 5-6)

3.4 Churchill and Lewis: five stages of small business growth

Churchill and Lewis (1983) have stated that many of the developed growth models are not suitable for small businesses. According to Churchill and Lewis, these models expect that a company grows constantly and passes through all the stages or cease when attempting to do so. Churchill and Lewis consider early stages of the growth important, which general life cycle models usually fail to catch. One more inappropriate feature with earlier developed models is that they consider company size only in terms of annual sales (some also mention number of employees) and ignore other size-affecting matters. (Churchill & Lewis 1983, 31)

Churchill and Lewis have built a framework which helps small business owners to identify the stage where their business is and to understand current problems and future trends. According to their framework, small business goes through five stages during its life cycle. The stages are labeled as Existence, Survival, Success, Take-off, and Resource maturity. Important factors which are taken into consideration for the framework are owner's style, financial circumstances of the business, size of the business, complexity, diversity, management style and organizational goals. Several other growth models only use two dimensions: business size and company maturity. (Churchill & Lewis 1983, 30) In 1994, Eggers, Leahy and Churchill decided to do a revised version of the life cycle framework. The revised framework is briefly introduced in chapter 3.5.2.

3.4.1 Stages of the model

The graphical form of Churchill and Lewis' life cycle model is shown in FIGURE 4. Five stages of the model are explained in the following. (Churchill & Lewis 1983, 30)

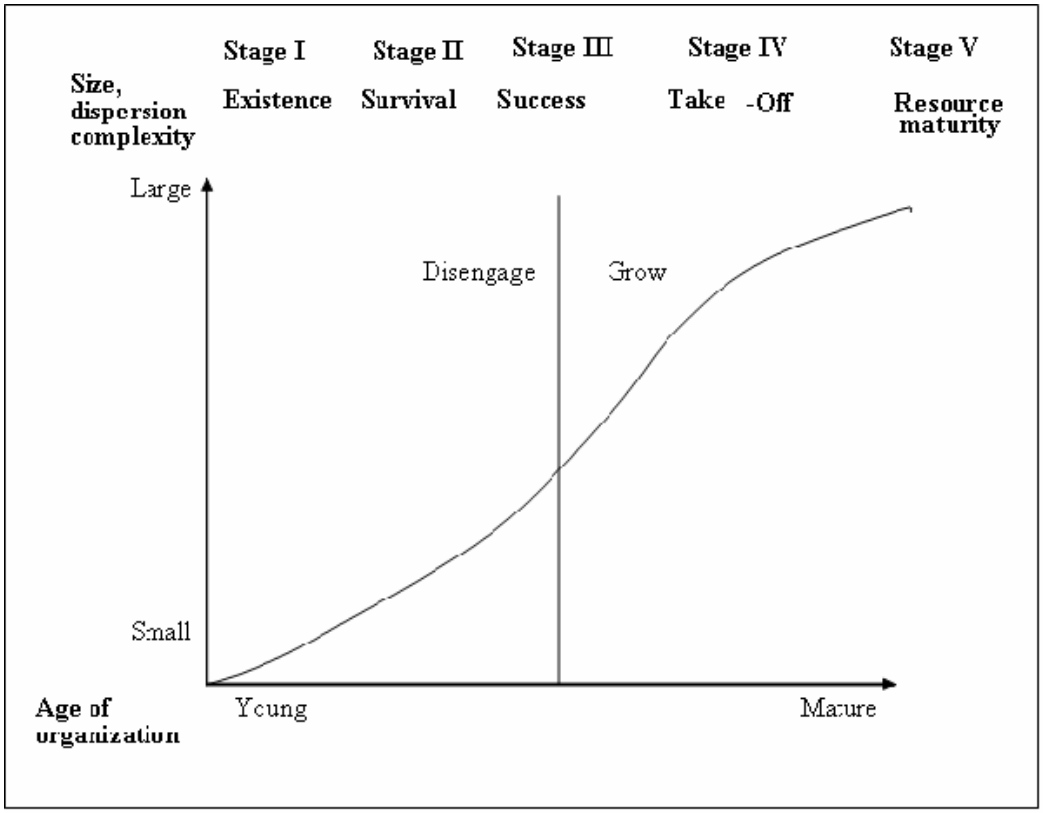

FIGURE 4 Growth stages (Churchill & Lewis 1983, 31).

Stage I: Existence. The main problems that companies face in this stage are: obtaining customers and delivering the ordered product or service. Company struggles with questions like do we get enough customers, and are we able to deliver the products that we can stay in business. Company has to consider whether it can expand from one key customer or pilot production to bigger sales. Adequate amount of money is needed to cover the cash demands of the

start-up phase. During Existence-stage the company's only strategy is simply to stay alive. Owner's role is emphasized and during the first stage owner really is the business. His role is to perform important tasks, keep the spirit up, show the direction, and most importantly, take care of the capital acquisition. First stage companies range from new restaurants to high-technology manufacturers without stabilized production. Many of these companies fail to make it to the second stage because they lack customers or product capability. The owners of these companies usually try to sell their business for its asset value after the start-up capital has run out. The companies remaining in business continue to the next stage. (Churchill & Lewis 1983, 31-34)

Stage II: Survival. When the company enters the second stage, it has proven that it is a workable business entity and has enough satisfied customers. Problems shift from existence struggle to the relationship between revenues and expenses. Main problems in this stage are: making enough money to break even and replacing the capital assets when they are worn out. Enough cash flow is needed in staying in business and growing to an adequately large size, to get a return on assets and make the business profitable. Owner's role is still to be synonymous with the business. Organization structure is kept simple; company may employ a few employees and a sales manager, whose only job is to follow owner's orders and wishes. Company's goal in Survival stage is to survive. If the company is doing some planning, it mostly includes cash acquiring. At this stage, company's systems development is minimal. (Churchill & Lewis 1983, 34)

Company has some options in the Survival stage. It may grow in size and profitability and move on to the next stage. Another, but worse choice is to remain at the second stage and eventually go out of business after the owner retires or gives up. These companies have earned some marginal returns on their spent time and capital. This category of business usually includes small family businesses and manufacturing businesses which could not sell their products as planned. Some of these marginal businesses have a possibility to be

sold, if they have developed enough economic capability. The last and the worst option is to fail completely and drop from sight. (Churchill & Lewis 1983, 34)

Stage III: Success. In this stage, owner has two alternatives; to exploit the company's accomplishments and expand or keep the company stable and profitable. The choice he makes, states his personal choices. Although, the actual choice is between whether to use the company as a platform for growth or as a means of support for the owner as he completely or partially disengage from the company. First alternative means entering the substage III-G (Success-Growth) and latter entering the substage III-D (Success-Disengagement). (Churchill & Lewis 1983, 34)

By the time company reaches **Substage III-D (Success-Disengagement)**, it has achieved good economic state, has sufficient size and product-market entry to guarantee its economic success, and it also makes average or above-average profits. The company can stay at Success-Disengagement stage indefinitely. (Churchill & Lewis 1983, 34)

Company has grown organizationally so big that managers can take over some of the owner's duties. Company's cash situation is relatively good, but it has to avoid overspending and save money for the rough times. Financial, marketing and production systems are taken into use. Managers and the owner do budget and strategy planning so that company can hold its current market position. Business and owner move slowly apart from each other as the business matures; owner has other interests and managers can take care of the owner's work. Many companies can stay in Success-Disengagement substage for a long period of time. Some of the companies can not grow, because their product-market niche does not allow it. This is the case e.g. in service businesses in small, slowly growing communities or franchising businesses. Some companies actually choose to stay in this stage. It is possible if these companies adapt to

environmental changes. They can also be sold at a profit or be encouraged into growth. If the company does not adapt to the changes, it will either go out of business or fall back to a marginally surviving company in Survival stage. (Churchill & Lewis 1983, 34)

In this growing emphasized **Substage III-G (Success-Growth)**, owner wants to make his company stronger and therefore invests all the resources in growth. Important tasks are to keep the company profitable and hire managers who have a vision of company's future and who can meet the needs of the growing business. New systems, which will be helpful in the future, are installed. Operational planning includes budget planning and effective strategic planning with the owner's high involvement. The owner's role is much more active than in Disengagement stage of this phase. If the company succeeds in its growth, it proceeds to the next stage. If not, it might shift to the stage III-D (Success-Disengagement) or back to the Survival stage. (Churchill & Lewis 1983, 34, 40)

Stage IV: Take-off. In this stage, company's problems involve rapid growth and financing the growth. Owner must be able to delegate responsibility to others to improve company's managerial effectiveness. Growth requires great amount of cash, which might be hard for the owner to accept. In Take-off stage, company is decentralized and divisionalized either in sales or production. High competence is needed from the managers. Systems are developed and refined. Specific managers take care of intensive operational and strategic planning. The owner dominates company with his presence and stock control, yet the business and owner have grown apart. This is a turning point of a company; if the owner can handle the financial and managerial challenges of a growing company, company is on its way becoming a big business. If not, company can be sold at a profit, when done at a right time. Problems in this stage are: the owner does not recognize his poor management skills soon enough, company suffers from too fast growth followed by lost cash or the owner is lacking effective delegation skills. If the company fails to be great success in this stage,

it still has a chance to stay in Take-off stage and continue as a successful company at a state of equilibrium. Company can also fall back to Success stage, or even Survival stage. In the worst scenario, company fails totally and goes out of business. (Churchill & Lewis 1983, 40)

Stage V: Resource maturity. Company's greatest concerns in this stage are to secure and control the money brought in by rapid growth and maintain the advantages of a small-sized company (e.g. flexibility and the entrepreneurial spirit). Operational and strategic planning has its own staff and financial resources. Company's management is decentralized, experienced and has enough employees. Company uses extensive and well developed systems. The owner is separated from the company both financially and operationally. This is the stage where the company has been on its way and now it has arrived. The advantages of the company include size, financial resources and managerial talent. If the company can retain its entrepreneurial spirit, it will be a very difficult to overcome in the market. If not, company may drive itself into sixth stage called ossification. That is a stage where company lacks innovative decisions and risk taking. Company is unable to change and will be left behind by its competitors. (Churchill & Lewis 1983, 40)

3.4.2 Eggers, Leahy & Churchill: stages of small business growth revisited

The revised model defines critical leadership/management skills which are needed in each stage. This study uses Reynolds' four classifications for growth companies (Low-Start/Low-Growth, Low-Start/High-Growth, High-Start/Low-Growth, and High-Start/High/Growth). Multi method survey approach was used. CEOs were asked to identify: what stage their businesses were currently in; what stages they had been in, and what stage they aspired to achieve. As a result of the study the third stage of Churchill's and Lewis' model (Success) was divided in two separate stages: Stabilization and Growth Orientation. The decision was based on assumption that all business owners

face a decision to stay or grow. This change adds the sixth stage to the life cycle. (Eggers, Leahy & Churchill 1994, 1-4)

Interesting matter is that 25% of respondents said that their organization development did not fully follow the model. Some companies skipped stages in the development progression; some companies dropped back a stage in development. There were also companies that both skipped and dropped back one or more stages. (Eggers et al 1994, 4)

There were individual company differences found in developmental progression, therefore using "Stages of Growth" was not longer appropriate term to refer to this process. The developmental transitions all organizations go through, were then referred collectively as "Phases of Management". (Eggers et al 1994, 8) These new revised phases of management of Churchill and Lewis' life cycle model are shortly described below.

Phase 1: Conception

- main goal is to create a business
- characteristics are: develop and deliver a viable product, develop an adequate customer base, create enough cash to meet the demands of start-up and staying alive

Phase 2: Survival

- company has shown its potential capability, established a market niche, is able to keep and satisfy customers
- characteristics are: establish enough sales for break-even cash-flow, generate enough cash flow for growth and staying in business, continue developing the business in its market niche, company is still very vulnerable to failure

Phase 3: Stabilization

- company is stable enough to support owners and is making some profit

- characteristics are: maintain the market niche and customers, eliminate cash draining problems, company can stay at this phase indefinitely

Phase 4: Growth Orientation

- resources and profits are used to feed growth, goal is to become a big company
- characteristics are: develop the resources and sales fro growth, develop management and internal systems to the demands of growth, relation of cash-flow and growth must be followed so that company does not drop back to an earlier phase or go bankrupt

Phase 5: Rapid Growth

- company has resources to grow rapidly, problems arise from how to do and finance the growth
- characteristics are: maintaining adequate cash flow, establishing expense controls, increasing customer base and market share
- professional managers often replace the original owner

Phase 6: Resource Maturity

- the company has survived the dangers of rapid growth, it has advantages of size, financial resources, well developed systems, experienced and well developed staff
- characteristics are: controlling financial gains which were brought on by rapid growth and eliminating inefficiencies, professionalizing management, budgets, planning, cost systems, well developed financial resources

Results of the study show no significant difference between High-Start/High-Growth and Low-Start/High-Growth companies in annual sales and in the number of people employed. CEOs of high-growth companies set priorities for leadership and management skills differently than CEOs of low-growth

companies. Study verifies that there are predictable stages of organizational development, which are common to many organizations. (Eggers et al 1994, 9)

3.5 Scott and Bruce: Five Stages of Growth in Small Business

Scott and Bruce (1987) have developed a life cycle model which describes the growth of a small business. In this model company moves through five stages during its development. Graphical form of the model is presented in FIGURE 5. Each of the stages is followed by a change, along with a crisis. The idea is to increase managers' prior knowledge of the crises in change situation. Intention of the model is to help small business managers to plan for future growth. The model is also a good diagnostic tool for analyzing the company's present position. Knowing where the company stands now, helps to plan the requirements needed for the next development stage. (Scott & Bruce 1987, 45)

Scott and Bruce's life cycle model is based on the life cycle and growth models of Greiner (1972) and Churchill and Lewis (1983) with some differences. The model is less centered in to organizational structure than Churchill and Lewis's model. Influence of the Greiner's (1972) model can be seen in crises points in Scott and Bruce's model, only the nature of the crises is different. Scott and Bruce state that a company can go out of business at any point during its life cycle, but most likely it is going to happen during one of the crises points. (Scott & Bruce 1987)

According to Scott and Bruce (1987), small business develops through five different stages, each stage characterized with its unique features. Five stages of Scott and Bruce's model are: Inception, Survival, Growth, Expansion and Maturity. The shift from one stage to the next requires change which is then accompanied by a crisis. Because the crises have a tendency of being disruptive, prior knowledge of what generates crises and what to expect in each stage will ease the change process. Managers' proactive (instead of reactive) behavior helps to ease the change. Definition of small business was introduced in

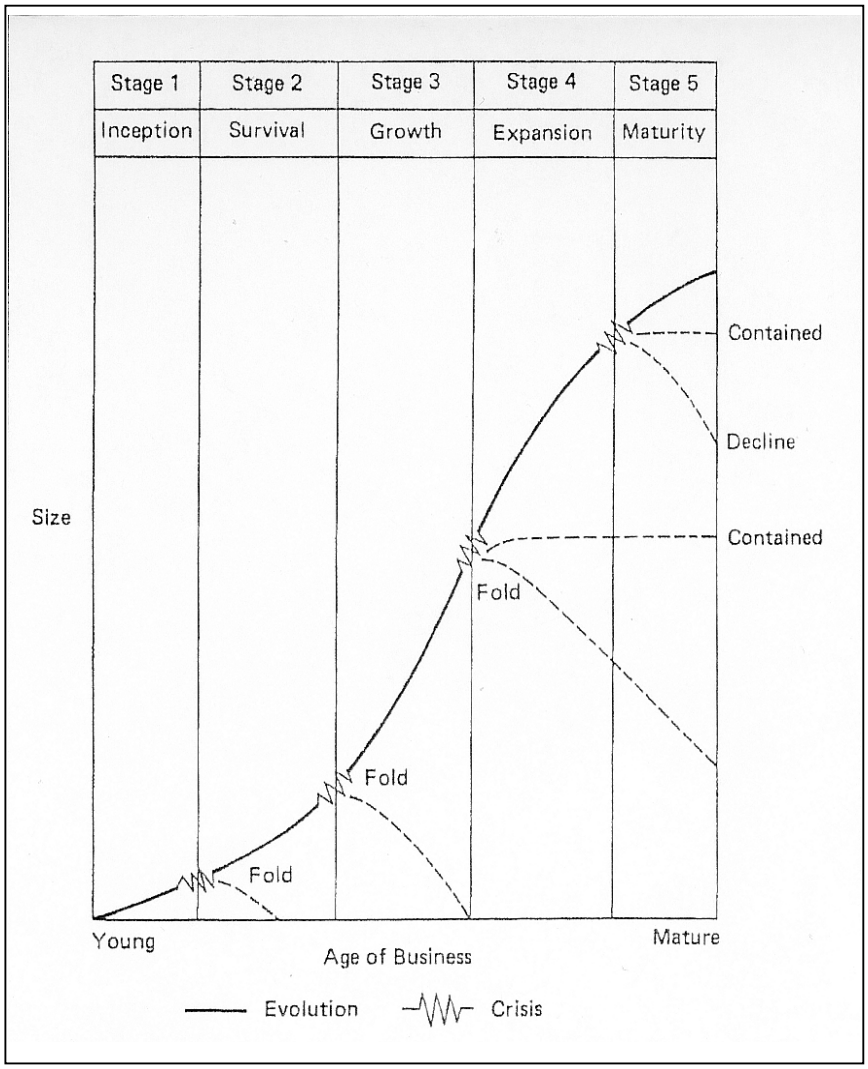

FIGURE 5 A model of small business growth (Scott & Bruce 1987, 47).

chapter 1, the small business in this model, is considered to follow the definition by American Committee for Economic Development. The size of a company is typically one of the key dimensions in the life cycle models. The size of a company is defined here to be a combination of sales, total assets, number of employees, and some external factor that forces company to move to the next growth level, instead of size being just a single measure precipitating change. Scott and Bruce's (1987) model has been successfully tested and used

by the authors in analyzing and solving the problems of small businesses. (Scott & Bruce 1987, 45-47)

3.5.1 Stages of the model

An overview of the model and its important factors are presented below in TABLE 2. The stages of the model are described more in detail in the following part.

TABLE 2 A Model of Five Stages of Growth in Small Business (Scott and Bruce 1987, 48).

	Stage 1. Inception	Stage 2. Survival	Stage 3. Growth	Stage 4. Expansion	Stage 5. Maturity
Stage of industry	Emerging, fragmented	Emerging, fragmented	Growth, some larger competitors, new entries	Growth, shakeout	Growth/shakeout or mature/declining
Key issues	Obtaining customers, economic production	Revenues and expences	Managed growth, ensuring resources	Financing growth, maintaining control	Expense control, productivity, niche marketing if industry declining
Top management role	Direct supervision	Supervised supervision	Delegation, co-ordination	Decentralization	Decentralization
Management style	Entrepreneurial, individualistic	Entrepreneurial, administrative	Entrepreneurial, co-ordinate	Professional, administrative	Watchdog
Organization structure	Unstructured	Simple	Functional, centralized	Functional, decentralized	Decentralized functional/product
Product and market research	None	Little	Some new product development	New product innovation, market research	Production innovation
Systems and controls	Simple bookkeeping, eyeball control	Simple bookkeeping, personal control	Accounting systems, simple control reports	Budgeting systems, monthly sales and production reports, delegated control	Formal control systems, management by objectives
Major source of finance	Owners, friends and relatives, suppliers leasing	Owners, suppliers, banks	Banks, new partners, retained earnings	Retained earnings, new partners, secured long-term debt	Retained earnings, long-term debt
Cash generation	Negative	Negative/breakeven	Positive but reinvested	Positive with small dividend	Cash generator, higher dividend
Major investments	Plant and equipment	Working capital	Working capital, extended plant	New operating units	Maintenance of plant and market position
Product-market	Single line and limited channels and market	Single line and market but increasing scale and channels	Broadened but limited line, single market, multiple channels	Extended range, increased markets and channels	Contained lines, multiple markets and channels

Stage 1: Inception. Owner-grounder of the company is the major strength of the company. Capital comes mostly from the owner and his relatives and friends. Main focus of the company is in the development of a commercially approved product as well as finding the right market for this product. Business planning is imprecise and insecurity is great. Company can stay in Inception phase only for a certain time, since the cash flow is negative. (Scott & Bruce 1987, 45)

Crises in this stage: Owner has to be able to turn the negative cash flow into positive if he wants to keep his company in business. This is done with profitable actions and taking administrational systems into use. (Scott & Bruce 1987, 45)

Stage 2: Survival. In Survival stage, company's focus is on increasing the volume followed by the growing need for working capital. Usually the additional funding is also required, since the cash flow is still negative or just around the break-even point. Company has only few products and the growth is based on increasing demand. Competition is non-existing, but the risk of competitors is growing, therefore new marketing channels are needed. Company can remain in Survival stage for a while, but the changing state of competition and the desire for profitability are moving it towards the next stage. (Scott & Bruce 1987, 45)

Crises in this stage: The biggest danger in Survival stage is uncontrollable, too fast growth. The growth rate should not be strictly limited, but the ideal situation is a moderate growth. Since the competition is growing, company needs to choose between two strategies: active pricing policy or differentiation. First strategy demands growth of the product volume or capacity whereas the second one requires more efforts put into marketing and product development. Both strategies require more capital and more pressure on the management information systems to get reliable and up-to-date knowledge. (Scott & Bruce 1987, 46)

Stage 3: Growth. When the company reaches the Growth stage, it is already operating profitably, but it is still not able to pay dividends to its owners and investors. Organization has grown and it has a formal structure. Operations are outsourced and the original owner gives up some of his power. There is a need for a professional leader e.g. CEO (Chief Executive Officer). Owner might even get a chance to sell his business with a good profit. Growth is a stage where company can stay for a longer period of time. (Scott & Bruce 1987, 46)

Crises in this stage: The original owner steps aside and gives room for the new leader. The competitors enter to the market and start the price competition. At this point, company can choose to enter the less crowded markets, but in order to do that, it needs strongly invest in product development. If a company chooses to do this, it also moves on to the next stage. (Scott & Bruce 1987, 46)

Stage 4: Expansion. Main actions are focused on client needs, so that production can be adjusted according to that. Marketing and product selection become more meaningful. Management information systems, accounting systems and reporting systems are vital for company's operation. Top management moves from "daily work" to planning and supervising. New long-term financing is required in this stage. The cash flow has been positive for a while so the company can start sharing dividends, which is also done to attract new investors. (Scott & Bruce 1987)

Crises in this stage: The original owner moves in to a role of planner and developer, which is something he is not used to do. Hired professional managers are given more power, and the development view is coming from the outside of the company. Customer's wishes become the main operating factor. (Scott & Bruce 1987, 47)

Stage 5: Maturity. In this stage, companies are no longer small. Their growth continues, but it is slower. Company is profitable and investments can be

financed by internal financing. Challenges for management are cost efficiency, productivity and acquiring new growing opportunities. (Scott & Bruce 1987)

According to Scott and Bruce, entrepreneur faces several problems and crises during its life cycle. Strategic decisions and solutions, which are done to get over the crisis, change and end up causing the next crisis. In the beginning of its life cycle company faces more external problems but as it grows, internal problems are emphasized. (Scott & Bruce 1987, 47)

3.6 Software firm evolution stages by Nambisan

As the software industry is considered as a frontrunner in the high-technology domain, it presents a valuable context to survey issues related to firm growth and evolution. Nambisan (2002) defines a software firm growth stage model that reflects the changes in a firm's process and product portfolios. The model considers the innovation-orientation of internal stakeholders to explain firm evolution. In his research Nambisan (2002) studies companies' evolution in the software industry based on two scopes: the nature of the software product and the range of new product development (NPD) tasks carried out by the firm. These scopes relate to the change in the company's product and process characteristics. This innovative-based growth model reflects the inter-relationships among innovation, profit maximization, and firm evolution; the facts which are not explained well by generic life cycle models. In most high-technology companies, innovation and knowledge creation form the basis for continued growth (Nambisan 2002, 142). Nambisan identifies four development stages for software companies: Start-up, Utility-developer, Expert-coder, and Star. Nambisan's model is presented in FIGURE 6 below and the stages are explained after that. (Nambisan 2002)

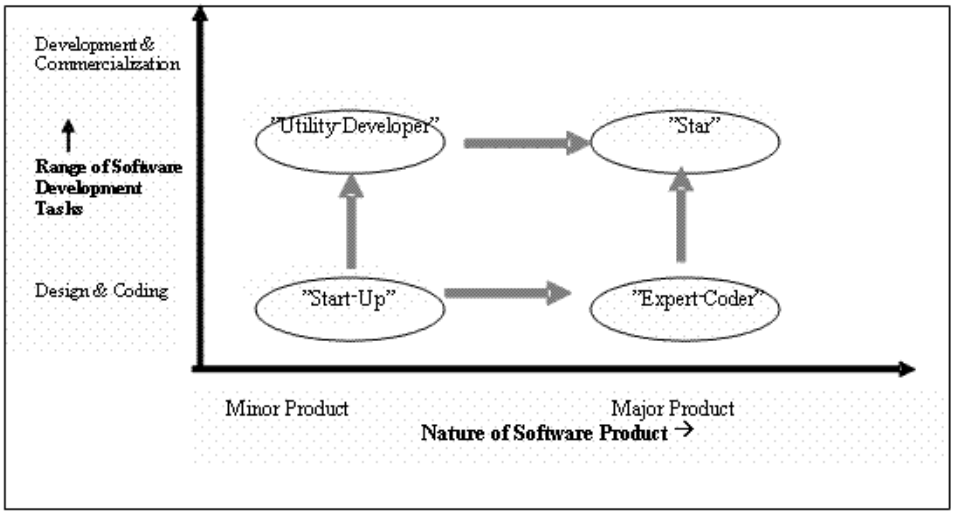

FIGURE 6 Software firm growth model (Nambisan 2002, 148).

Start-up companies are originally involved in designing and coding of small software packages. They are characterized by limited financial resources, lack of product vision and ability to develop or market their products. Company lacks experience from bigger software projects and without that, does not get contracts from larger software firms. It focuses on managing human resources cautiously and gaining experience in coding and testing. Start-ups exist specifically in the areas where the entry barrier is low (e.g. India and Russia). (Nambisan 2002, 149)

Utility-developer develops minor software products and markets them itself. It has product development experience, but a narrow technological focus and no product vision. This company experiences tight competition and low margins followed by constrained financial resources. Company uses effective marketing at a minimal cost and its products are pushed through non-traditional channels

like shareware and the Internet which increase the exposure inexpensively. (Nambisan 2002, 149)

Expert-coder is involved in designing and coding of major software products on contract basis for big clients. It is a large unit with high experience in product coding, but has limited financial resources to source and market its own products. Company emphasizes software engineering and human resource management. These types of companies are common in e.g. Hungary and Ireland. (Nambisan 2002, 149)

Star is a mature software company with considerable financial resources and experience in developing and marketing innovative software products. It has high profits and controls important product markets. (Nambisan 2002, 149)

The nature of the software industry has to be considered when examining this model. It is assumed that the objective of company evolution is to maximize economic profit. These economic gains can be maximized only if the company becomes a Star. (Nambisan 2002, 149)

3.7 Kazanjian: stage growth model for high-technology ventures

Kazanjian (1988, 1990) has studied the stages of growth in technology-based new ventures. He was interested to know how the models of organizational growth and development found in the management literature and typically theorized hold for all organizations apply to technology-based new ventures.

He used two case studies in his first research. The results from these case studies identified the four-stage model of organizational growth. The model developed in his study is somewhat consistent with several models found elsewhere, but it differs in it that it explicitly describes stages as linked to dominant problems. Development of technology-based ventures proceeds through a predictable pattern that can be related to the problems a firm finds

pressing at sequential times. Kazanjian states that his model holds only for technology-based new ventures, that market a physical product, not services, and that it explains only internally generated growth, not growth through acquisition or merger (Kazanjian 1988, 140).

"… it is argued that a technology based venture's rate of growth depends, in part, on the consistency or "fit" between its stage of growth and certain structural features of its organization, including decision-making centralization and formalization, and functional specialization in the areas of marketing and sales, manufacturing, and engineering/technology (Kazanjian 1988, 137)."

The stages (FIGURE 7 below) of the model are called Conception & Development, Commercialization, Growth, and Stability, and they are described more detailed in the following.

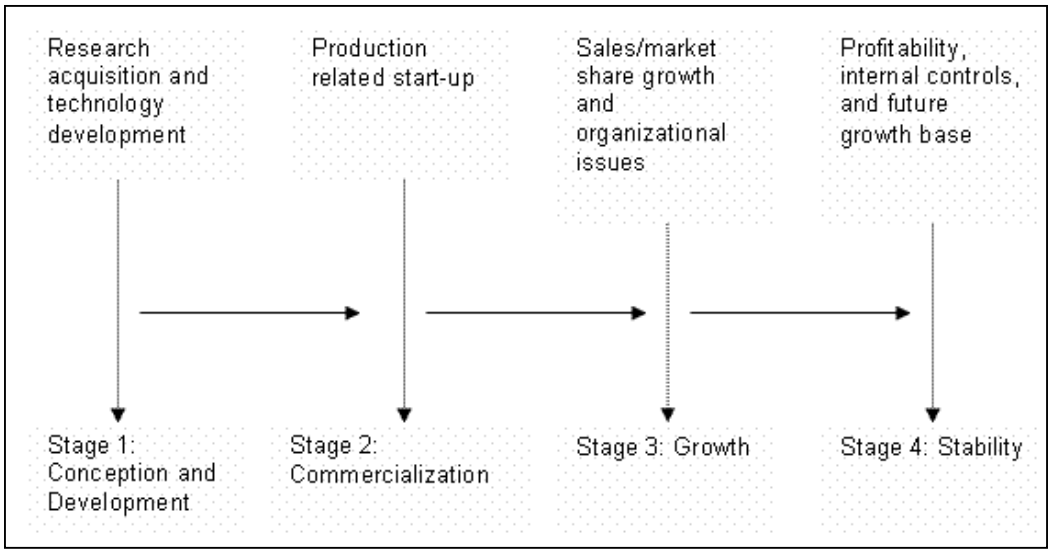

FIGURE 7 Relation of dominant problems to stages of growth (Kazanjian 1988, 262).

3.7.1 The stages of Kazanjian's model

Stage 1: Conception and Development. This is the stage most of the companies go through before the real company foundation. The focus is on inventing and developing a product or a service, which is later on used as a basis for a business. Company's structure and formality do not exist yet in this stage. Activities are involved around technical matters, usually because of the owner/founder's technical background. Problems in this stage evolve around business idea's development, constructing a prototype of a product, and selling the business idea to financial investors. (Kazanjian 1988, 140)

Stage 2: Commercialization. When the companies have secured their financing, they can focus on developing the product for commercialization. Technical issues are still on top as the company works together like a new product development team. Company is still very informal, but a separate person might be hired to take care of company's critical functions. Owner/founder or the group of partners dominates the company on their own. Product is launched and ready to be sold. Problems may occur with the beginning manufacturing, marketing or initial engineering. (Kazanjian 1988, 140)

Stage 3: Growth. This is a period of high growth. Company tries to hold its market share and struggles with the matters of producing, selling, and distributing the product in volume. Some efficient and formal task systems might be built. Company faces several changes in this stage. Owner is still in control, but his power is questioned. The movement towards more professional and experienced personnel can be seen. Establishing market share and managing the personnel problems caused by high growth are also challenges. (Kazanjian 1988, 141)

Stage 4: Stability. The growth rate slows to an average level of the market growth. Company is having problems in maintaining the growth and its market share. Focus is on development of a second generation product. Now

the company has stable operations, characterized by bureaucratic principles across it. Owner or the controlling partner group is usually replaced by a professional CEO. Employees are also specialized, less innovative and not willing to take risks. Problems in this stage are caused by launching the second product line while trying to manage efficiency of already existing product line. (Kazanjian 1988, 141)

3.8 The stages of growth by Galbraith

Galbraith (1982) has noticed in his work with companies that managers do not often think stagewise. He states that new-venture founders often find themselves unprepared to manage growth-related transitions effectively. Managers often believe in what has worked well in previous stage and refuse to change organization when it becomes inappropriate. Therefore, based on his findings, Galbraith has developed a model which describes the stages which high-technology venture progresses through. The model can be used as a guidebook for organization's decision-making. Galbraith believes in development of a business idea and its interrelationship with organization concept, which is an integrated set of pieces. Each development stage and the business idea together determine the task which is performed. According to Galbraith (1982) the concept of organization consists of dimensions of tasks, people, reward system, structure, and decision processes, each connected to the others. (Galbraith 1982, 70-71)

3.8.1 Stages of the Galbraith's model

Galbraith's stages of a venture are Proof-of-Principle/Prototype, Model Shop, Start-Up/Volume Production, Natural Growth, and Strategic Maneuvering. These stages correspond to funding stages and points in company life cycle where natural changes occur. The stages are shortly described in the following. (Galbraith 1982, 72-73)

Proof-of-Principle and Prototype stage. Organization as such does not exist yet, company consists of an eager entrepreneur with a great business idea and some technical engineers. The main task is to invent a device and develop technology for it. Main task is to continue inventing, but also manufacture the first invented device to make a prototype. Number of employees grows from handful to 20-30.

Model-Shop stage. This stage involves production of the product and testing it in the manufacturing shop and also in the market. The number of employees reaches 100.

Start-Up/Volume Production stage. This stage involves big investments and manufacturing product in a volume. Administrative matters in finance and human resources emerge.

Natural Growth stage. Natural growth of the market guides this stage. The task of making money replaces the task of making a product. This stage relies on making company profitable. The planning and budgeting systems emerge. As the first product continues to be modified, the second-generation product starts developing.

Strategic Maneuvering stage. Company aims to become the market leader. Growth is achieved through forward or backward integration within the industry, diversifying into the new markets with the same product and technology, acquiring a firm to form a new product line, or international expansion. However, the intention is not to grow in more than one strategic direction. (Galbraith 1982, 72-79)

> *"If the managers know the stages, the appropriate organization, and the transition issues, they can more easily decide and implement the organization that they need"* (Galbraith 1982, 79).

3.9 Applying Churchill and Lewis' life cycle model to software business

Churchill and Lewis (1987) assure that their life cycle model can be used for evaluating all types of small businesses. High-technology start-up companies are mentioned as an example. High-technology start-ups like computer software businesses are very visible companies, which attract and interest investors. Many of these companies are started with the idea that the company grows very fast and then goes public or that the owner sells it later on to another company. This strategy only has one flaw; the need for permanent source of outside funding from the very beginning. Usually venture capitalists, which provide this money, bring operating and planning systems of a Success (stage III) or Take-off (stage IV) level company with them. Often they also bring along an outside board of directors to supervise their investment. With the help of provided resources, company passes through Existence stage, stays in Survival stage only for the time before the product comes to the market and then reaches the third stage Success. At this point, the owner has exceeded his managerial skills and the outside capital interests state a change in management. After that, company moves quickly to Take-off stage and depending on the skills and abilities of the development, marketing, and production staff, the company becomes a big success or an expensive failure. The problems in high-technology start-ups are often caused by a contradiction of the owner-founder's problem-solving skills and the demands that "forced evolution" bring to the company. (Churchill and Lewis 1987, 48)

3.10 Summary of life cycle theories

As noted previously, several theoretical perspectives have been applied to study company life cycles and development. Clear similarities can be found between the models. Number of stages is between four and five, stage names are quite similar (growth-expansion, stability-maturity) and the shape of some models is quite similar (compare Greiner, 1972; Churchill & Lewis, 1983; Scott &

Bruce, 1987). Greiner's (1972) evolution and revolution theory is the oldest of the reviewed models and therefore the resemblance with latter models is understandable.

Along with the generic life cycle models, the aspect of high-technology life cycle models was discussed in this study. Characteristics of software business include rapid growth and high rate of product and process innovation as well as short product life cycle. As many small software companies are single product firms, the short product life cycle results in equally short business life cycles. (Nambisan 2002, 146)

The software industry offers some difficult cases when compared with generic business fields. Typical example can be a young high-technology company, which has developed a good product and is selling it through Internet. Usage-based product pricing enables extremely fast growth rates even overnight (Nambisan 2002, 146). The nature of this company's life cycle makes it very hard to be put in any of the generic life cycle models.

Churchill and Lewis (1983) state, that their generic life cycle model can be applied to software companies as well. To make this statement relevant, some empirical studies are needed. Based on literature only, it is hard to make a definite conclusion about whether generic life cycle model is suitable for a software business.

Nambisan's four-stage model can be compared with generic growth models. The generic models have defined stages like start-up, growth, expansion, maturity and decline. Nambisan's four stages Start-up, Utility-developer, Expert-coder and Star can be compared with the generic models' stages as follows. The start-up stage is comparable with generic models' start-up phases. The Expert-coder and Utility-developer stages correspond to the growth or expansion stages of generic models as they involve expanding the company's product or process portfolios. The last stage of Nambisan's model, Star, can be

compared with the maturity stage of generic models, as it requires achieving maturity in both the nature and the process of innovation undertaken by the firm. Nambisan's model does not involve the decline stage, but in the dynamic nature of the software business, company in Star stage can easily loose the essential nature of its product and fall back to previous stages.

Similarity with Nambisan's model to Churchill and Lewis' model is the fact that a company can decline few stages back. Whereas in Nambisan's model Star can become Utility-developer again and try to develop a new major innovative product, in Churchill and Lewis' model a company in Take-off stage might have to fall back to Success or even Survival stage.

TABLE 2 shows the stages of each presented model and how these stages fit to five generally theorized stages of life cycle (see Hanks et al 1993).

Each of the presented life cycle models uses contextual and structural dimensions for describing it. Some of these dimensions can be found in several models, whereas others can only be found in one specific model. Usually these unique dimensions form the main character of that model. Descriptive dimensions of reviewed life cycle models are presented in TABLE 3.

TABLE 2 Comparison of Life-Cycle Stage Models (modified from Hanks et al 1994, 10).

Model	Start-Up	Expansion	Maturity	Diversification	Decline
Greiner (1972)	1. Creativity	2. Direction	3. Delegation	4. Coordination 5. Collaboration	
Churchill & Lewis (1983)	1. Existence 2. Survival 3-D Success-Disengagement	3-G Success-Growth 4. Take-Off	5. Resource Maturity		
Scott & Bruce (1987)	1. Inception 2. Survival	3. Growth 4. Expansion	5. Maturity		
Kazanjian (1988)	1. Conception & Development 2.Commercialization	3. Growth	4. Stability		
Nambisan (2002)	1. Start-Up	2. Expert-Coder 3. Utility-Developer	4. Star		
Galbraith (1982)	1. Proof of Principle/Prototype 2. Model-Shop	3. Start-Up/ Volume Production	4. Natural Growth	5. Strategic Maneuvering	
Miller & Friesen (1984)	1. Birth	2. Growth	3. Maturity	4. Revival	5. Decline

TABLE 3 Descriptive dimensions of presented life cycle models (modified from Hanks et al 1994, 8-9).

Model	Contextual Dimensions	Structural Dimensions
Greiner (1972)	Age, size, industry growth rate, management focus.	Organizational structure, formalization, top management style, control system, management reward emphasis.
Churchill & Lewis (1983)	Age, size, growth rate, major strategies.	Management style, organization (form & levels), extent of formal systems, business/owner relationship.
Scott & Bruce (1987)	Age, size, growth rate, industry stage, key issues: source of finance, cash generation, major investments, products/market scope.	Structural form, formalization of systems & controls, top management role/style, centralization.
Nambisan (2002), two general dimensions	Nature of the software product, range of new product development (NPD) tasks carried out by the company.	
Kazanjian (1988)	Age, size, growth rate, dominant management problems.	Structural form, formalization, centralization, top management composition.
Galbraith (1982)	Age, size, growth rate, task.	Structural form, people (specialization), reward system, processes (formalization), centralization, leadership style.
Miller & Friesen (1984)	Age, number of employees, sales growth, size (relative to competitors), concentration of ownership, stakeholder influence; environmental dynamism, hostility & heterogeneity; strategy variables reflecting: extent & frequency of product innovation, diversification, geographical expansion, and marketing orientation.	Basis of organization, participative management, sophistication of info and systems, performance controls, action planning, environmental scanning, formal controls, internal communications, centralization of power, delegation for routine decisions, technocratization, resource availability, differentiation, decision-making style (13 dimensions).

4 INTERNATIONALIZATION PROCESS

The purpose of this chapter is to introduce three models of company internationalization process and review the existing literature of the models.

4.1 Introduction to internationalization models

The term internationalization is often used for describing the growth in a company's international operations (Chetty & Campbell-Hunt 2003). In attempt to capture the process of internationalization, several theories and concepts have been suggested. The notion of a company expanding to international markets in an incremental, stepwise manner is perhaps the most widely documented in literature. The so-called stage models have received a lot of attention and have been often used as building blocks for other internationalization process theories (i.e. Chetty & Campbell-Hunt 2004). Perhaps the best known of the stage models is the Uppsala model which assumes that the process of internationalization should follow a predefined path in order to be successful (Gankema, Snuif & Zwart 2000). The process is described as a gradual and slow development, taking place in distinctive stages.

The Uppsala model was developed in the 1970s based on empirical findings of the international processes of large multinational companies (Johanson & Wiedersheim-Paul 1975, Johansson & Vahlne 1977). Despite the model's general popularity, several researchers argued soon after its development that the model has become inappropriate. The model was mostly criticized in terms of empirical supportability of incremental stages in the internationalization process (Bell 1995, Madsen & Servais 1997, Crick & Jones 2000). There was increasing evidence of speeding up of the internationalization process (Bell 1995) and of companies that internationalize very early in their life (Oviatt & McDougall 1994).

In the 1980s networks became under examination as an emerging organizational design appropriate to the global high-technology industry characterized by high-growth and entrepreneurial ventures (McNaughton 2003, Crick & Jones 2000). It has been suggested that the network internationalization model can offer a fresh perspective for, especially, smaller company internationalization processes (Coviello & Munro, 1995). Also the founders of the Uppsala model recognized the importance of network aspect in the internationalization process (Johanson & Vahlne 1990). The network approach emphasizes the networks of interaction or relationships between a number of players through which activities and resources are exchanged and shared. According to the approach, companies internationalize because other companies in their national network internationalize (Buckley & Ghauri, 1999, 10).

In beginning of 1990s increasing number of arguments started arising claiming that none of the existing theories of internationalization process can explain the growing number of companies that internationalize soon after or at the time of establishment. Especially a need for models that can capture the early phase of internationalization better have been emerging (i.e. Oviatt & McDougall 1994, Knight & Cavusgil 1996). The speeding internationalization process seemed to be mostly manifested among high-technology industries where high R&D costs, shorter product lifecycles and a concentration of the market for high-technology product accelerate the pace of internationalization (Bell 1995, 62). As a result, the born global, among with other parallel concepts, and the International New Venture Theory have been developed to answer the question why these companies are emerging in growing numbers.

4.2 Uppsala model of internationalization

One of the most widely used and documented models of the internationalization process is the so-called Uppsala model. It was one of the

initial stage models first introduced by Johanson and Wiedersheim-Paul (1975) and further developed by Johanson and Vahlne (1977). The model focuses on acquisition, integration, the use of knowledge about foreign markets, and an increasing commitment and resource allocation to the markets. The Uppsala model's underlying assumption is that as companies learn more about a specific market, they become more committed to it by investing more resources into that market. The Uppsala model assumes that a company first develops in the domestic market and that internationalization is the consequence of series of incremental decisions. The lack of knowledge and resources are the prominent obstacles to internationalization (decisions) according to the model. The obstacles can be reduced through incremental decision making and learning about the foreign markets and operations (Johanson & Wiedersheim-Paul, 1975). The foundation and the main concepts of the Uppsala model can be seen in FIGURE 8 on the next page.

The model was originally based on observations indicating that companies start international operations when they are still comparatively small and then gradually develop their operations abroad. Initially the model has its roots in internationalization of manufacturing companies but it is said to be applicable to other types of companies as well (Johanson & Wiedersheim-Paul 1975). The Uppsala model seeks theoretical explanation through behavioral theory of a company and Penrose's (1959) theory of the growth of the company (Johanson & Vahlne 1990, 11). Internationalization is seen as process of a series of incremental decisions and gradually increased international involvement. It considers experiential knowledge and learning as prominent factors in the internationalization (Johanson & Vahlne 1977).

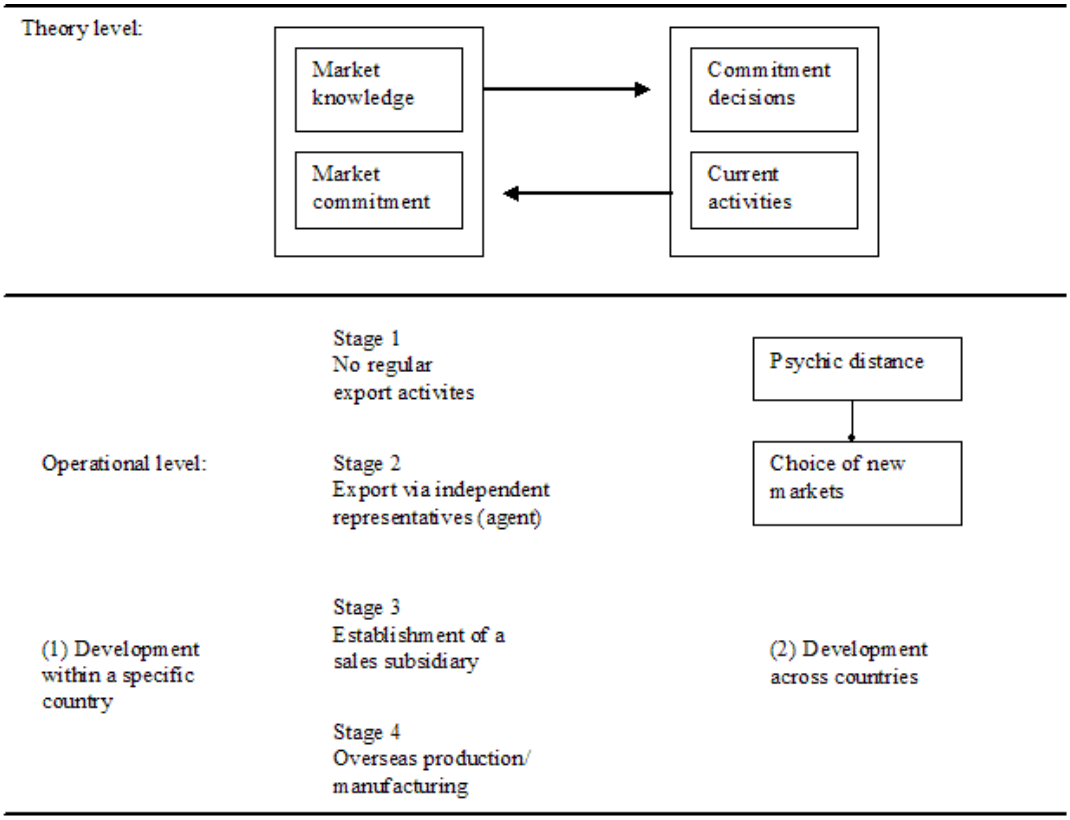

FIGURE 8 Concepts of the Uppsala model (Anderssen 1993, 222).

4.2.1 Internationalization variables

An important strength of the model is its simplicity. By using only few variables, the model has managed to present reasonable explanations for a significant amount of company internationalization (Forsgren 2002, 270). The main structure in the model is given by the distinction between the state and change aspects of internationalization in the decision-making (see FIGURE 9). With these aspects model was developed into a dynamic model of internationalization where the outcome of one decision, or one cycle of events, constitutes the input of the next. This means that the present state of

internationalization is one important factor explaining the course of following internationalization. (Johanson & Vahlne 1977, 47)

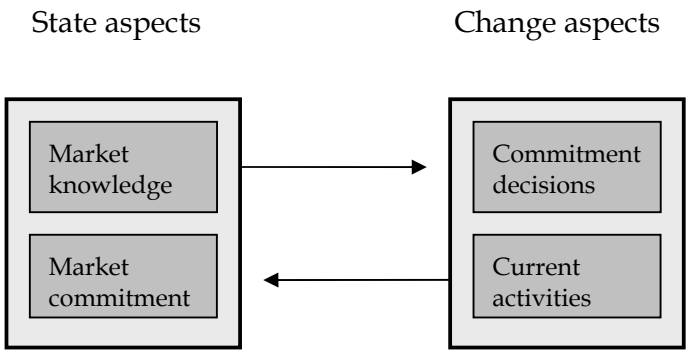

FIGURE 9 Dynamic model of internationalization process (Johanson & Vahlne, 1977, 47).

The state aspects in the model are market commitment and knowledge, the resources allocated to foreign markets. The change aspects, in turn, are the decisions made about the commitment of resources and the activities performed in current markets. Market commitment and market knowledge are assumed to affect commitment decisions and the way that current activities are performed. These in turn change market knowledge and commitment (Johansson & Vahlne 1977, 47-48). The market commitment concept is composed of two factors, the amount of resources and the degree of commitment. This means that the degree of commitment is higher the more resources are integrated with other parts of the company. The value of resources is derived from these integrated activities. Further, the more specialized the resources are to a specific market, the greater is the degree of commitment. The amount of market resources committed –the other part of market commitment- means the roughly the size of the investment

in the market, including investments in marketing, organization, personnel etc. (Johansson & Vahlne 1977, 48-49)

Commitment decisions can then be based on many kinds of knowledge. General knowledge concerns marketing methods, common characteristics of customers etc., irrespective of their geographic location. Following, market specific knowledge is knowledge specific to one market (the business climate, cultural patterns, characteristics of specific customers etc.). The latter type of knowledge can be gained mainly through experience in the market, whereas the generic knowledge can often be transferred from one country to another. The Uppsala model emphasizes this experiential learning in acquiring knowledge, which is also a reason for the internationalization process to proceed slowly; experiential knowledge is gained through experiences in a country. The results from the previous stage can then act as a starting point for the next phase of internationalization. According to Johanson and Vahlne (1977), there is a direct relationship between market knowledge and market commitment: knowledge can be considered a resource and consequently the better the knowledge about a market, the more valuable are the resources and stronger the commitment to that market. (Johanson & Vahlne 1977, 49-50)

Johanson and Vahlne (1977) also state that the current business activities are the primary source of experience. Commitment decisions are decisions to commit current resources to foreign operations. These decisions are made in response to perceived risks and opportunities in a given market and, therefore, the commitment decisions are dependent on experience and related to the current operations performed in that market. (Johanson & Vahlne 1977, 50)

4.2.2 The patterns (operationalizations) of internationalization

Based on the empirical findings, the Uppsala model describes two patters of the internationalization process: 1) a company's development within a specific

country and 2) its development across countries. The model was developed in order to explain these two patterns, they describe the way that companies behave when entering one or more countries, using knowledge as an explanatory factor (Johanson & Vahlne 1990).

Different development (i.e. learning and commitment) stages for the stage models have been presented in literature. In general, the stage models consider the internationalization of a company to be a process analogous to the stages of product adoption and each subsequent stage as an innovation for the company. The Uppsala model differs from other stage models in that it describes the establishment within a country as a chain of events or stages. These stages mean successively larger resource commitments and they lead to quite different market experiences and information for the company (Johanson & Wiedersheim-Paul 1975, 28). The development (establishment chain) within a specific country can be seen in FIGURE 10. Companies' development is not expected always to follow the whole chain, but a gradual process of internationalization is argued to be the most typical (Johanson & Wiedersheim-Paul 1975, 29).

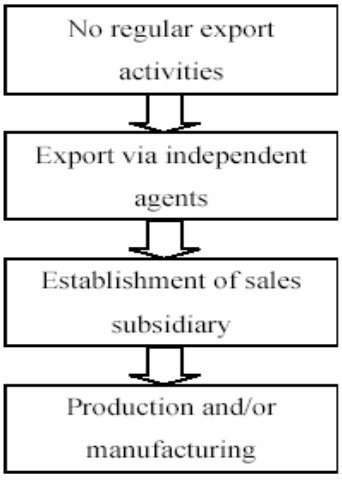

FIGURE 10 Stages of internationalization (Johanson & Wiedersheim-Paul 1975, 29).

The second pattern explained by the model is that companies enter new markets with successively greater psychic distance (Johanson & Vahlne 1990, 13). The concept of psychic distance is defined as factors preventing or disturbing the flows of information between the companies and market (Johanson & Wiedersheim-Paul 1975, 29).

Physic distance is often correlated to geographic distance. The choice of markets also occurs in stages; companies begin exporting to a market that has a close psychic distance and they expand into markets that have increasingly greater psychic distance in terms of culture, economic and political differences and well as in relation to their geographic distance. (Johanson & Wiedersheim-Paul 1975, 29)

The model recognizes the difficulty of gaining knowledge about foreign markets. Differences in language and culture, political systems etc. and, in the past, the slow speed of communication and transportation channels between countries have inhibited the gathering of information about foreign markets and have increased the perceived risks of foreign operation (Oviatt & McDougall 1994, 50). Johanson and Wiedersheim-Paul (1975, 29) did not conclude why companies start internationalizing but assumed that because of lack of knowledge about other countries and the propensity to avoid uncertainty, the company starts exporting to neighboring countries or to countries that are well known and similar with regard to business practices etc.

Johanson and Vahlne (1990) emphasize that it should be noted that these presented patterns are only manifestations of the process in the internationalization and that the process is a theoretical model based on assumptions about the relations between the concepts of market commitment, market knowledge, current business activities, and commitment decisions. The patterns can be seen as operationalization of the process model with the stages and the physic distance as possible indicators. Other indicators can also be

possible and other patterns may be derived, conclude Johanson and Vahlne (1990, 13).

4.2.3 Exceptions to and criticism of the Uppsala model of internationalization

The Uppsala model of internationalization has been generally well accepted in literature. It has been used, tested, modified and criticized by researchers all over the world. After the initial development of the model, Johansson and Vahlne (1990) have noted on three exceptions to it: 1) companies with large resources experience small consequences of their actions and can therefore take larger internationalization steps, 2) in stable and homogenous market conditions, relevant market knowledge can be gained in ways other than experience, and 3) when a company has considerable experience from markets with similar conditions, it may be able to generalize the experience to any specific market (Johanson & Vahlne 1990, 12).

Criticism towards the conceptualizations of internationalization as a gradual process started emerging already in the late 1970s (McNaughton 2003). In a more recent article Johanson and Vahlne (1990) themselves have identified several types of criticism on the model. Below the most occurring ones that are found in literature:

(1) It is argued that the model is too deterministic and overlooks the individuals' possibilities to make strategic choices.

(2) Model's limited validity. The model is accused for not being valid for service industries and that it only explains the early stages of internationalization when the lack of market knowledge and market resources are still constraining factors (Forsgren 1989). Also the emergence of the so called Born Global companies has raised questions about the models validity (i.e. Coviello & Munro 1997).

(3) The model lacks explanatory power. The speed at which a company moves within and between stages has been ignored in the model. Further, it is not clear why or how the process takes place and how to predict movements from first stage to another (Arenius 2002).

(4) There have been changes in environment, i.e. it has been contended that the psychic distance has become less relevant as global communication and infrastructures have improved and as markets have become more homogenous (Bell 1995).

(5) The model does not account for interdependences between countries as companies do not view different countries as totally from one another (Johanson & Vahlne 1990, 15).

4.3 Internationalization through networks

A need for new models has been argued in a number of studies which have reported observations of the fact that the Uppsala model does not capture some important phenomenon of the modern international business (i.e. Johanson & Mattsson 1988, Johanson & Vahlne 1990, Coviello & Munro 1995). It has been stated that in order to comprehend the internationalization of a company, the context in which it operates needs to be understood (Chetty & Campbell-Hunt 2003). Following this discussion, Johanson and Mattson (1988) suggested that a company's internationalization success is more dependent on its position in networks and relationships within current markets, than on the chosen market and its cultural characteristics. As a result of the criticism prented in prevoius subchapter towards the Uppsala model, Johanson and Vahlne (1990) themselves supplemented the Uppsala model with the network model. The network model of internationalization brought the market level of analysis into the picture as it is suggested that the company should not be analyzed as an independent factor but as part of a network (Johanson & Vahlne 1990). If a company is faced with increasing demand, sophisticated customers, and a

volatile competitive market as well as a product that is strategically important, successful internationalization may require leveraging the skills and resources of other organizations. The network model has its roots in the resource-dependence theory which assumes that companies are dependent on resources of other companies (Johanson & Mattson 1988).

As defined by Axelsson and Easton (1992, 15), a network involves "a set of two or more connected exchange relationships". The network model is a model that describes industrial markets as systems of social and industrial relationships among different players, such as suppliers, customers, competitors and private and public agencies. Networks connect companies giving them resources and knowledge about industries and competitive trends. Smilor and Gill (1986) have identified six different types of actors in a (small) company's business network (see FIGURE 11 on the following page): major (large) and emerging (small) companies, universities, state and other local support (public sector), professional advisers in the private sector and other support (trade and other associations, chambers of commerce etc.) It is assumed that all these may assist companies in their internationalization (Nummela 2000, 33).

Companies that become members in these networks can be linked with key players in their business environments (Zahra, Matherne & Carleton, 2003). According to the model, the goal of a company is survival. Therefore, the driving force behind internationalization is the desire to use and develop resources in such a way that the company's long-term economic objectives are served (Arenius 2002, 32).

In the context of internationalization *process*, Johanson and Mattson based on the idea that when entering new markets, companies also enter new networks and have to create new relationships. Following this, they defined internationalization as a process by which network positions are established and changed in foreign networks (Johansson & Mattson 1988). As such, even

though the network model does not say which countries companies will enter and expand in, these relationships can drive, facilitate or inhibit a company's international market development and influence the choice of foreign market and entry mode (Coviello & Munro 1997, Johanson & Vahlne 2003).

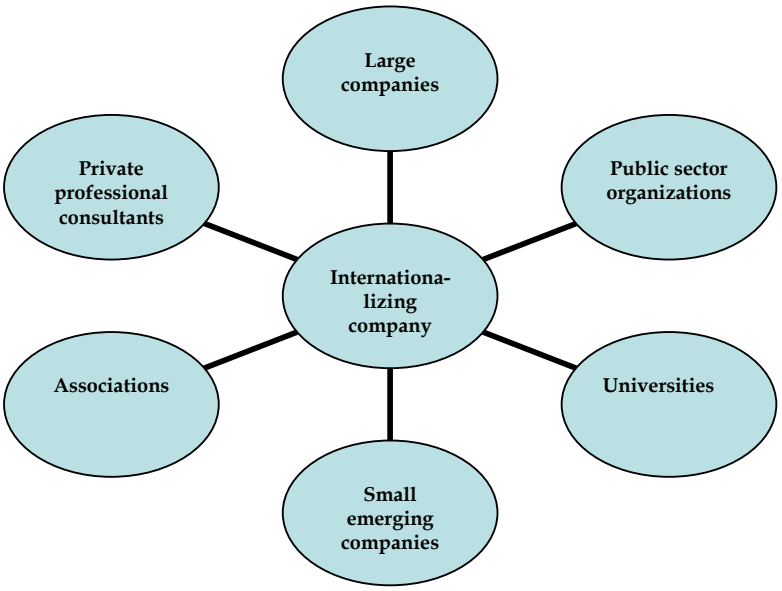

FIGURE 11 Possible actors in a company business network (adapted from Smilor and Gill 1986).

4.3.1 Degrees of internationalization

According to network approach, internationalization means that a company establishes and develops positions towards counterparts in foreign market (Johanson & Vahlne 1990, 20). Therefore, internationalization can be achieved in three different ways:

(1) Through the establishment of relationships in country networks that are now new to the company, i.e. by international expansion or foreign market entry

(2) Through further development of relationships in those networks that the company already has a position, i.e. penetration

(3) Through increasing coordination between networks in different countries, i.e. international integration

Extension refers to investments in networks that are new to the company, whereas penetration means developing positions and increasing resource commitments in networks, in which the company already has positions. Integration can be understood as coordinating different national networks. Links between different networks are created as companies belonging to different networks enter into interaction. Existing relationships can also be used as bridges to other networks in the internationalization process. Therefore, internationalization can be characterized as the process of developing networks of business relationships in other countries through extension, penetration, and integration. (Johanson & Mattson 1988)

The network model of internationalization also draws attention to a company's changing situations as a result of its position in the network and associated relationships. Johanson and Mattson (1988) used the network model to develop a framework in which different degrees of internationalization of a company (high, low) and different degrees of internationalization of the market (high, low) are used to differentiate internationalization situations. This is illustrated in FIGURE 12 on the following page.

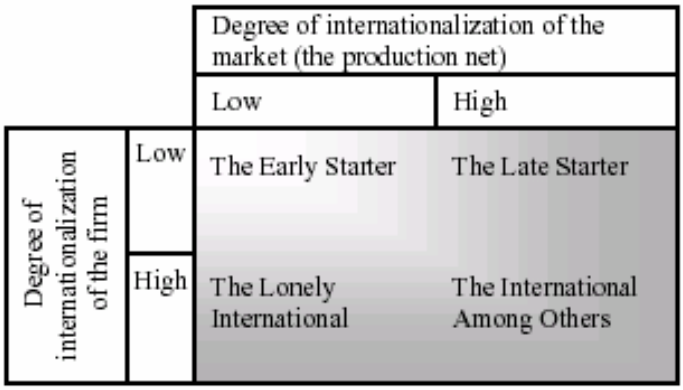

FIGURE 12 Degrees of internationalization (Johanson & Mattson 1988).

According to the framework, a company will become international (among others) in industries where internationalization has reached advanced levels. This applies to situations where most companies in the industry are involved in internationalization processes across nations. On the other hand, the early starter company has a low degree of internationalization with its network sharing the same characteristic. The late starter also has a low degree of internationalization, but it is positioned in a highly internationalized industry. Further, it has a low level of commitment and activity in international markets as well as few direct relationships. The lonely international resides in an internationally inexperienced network and has a high degree of commitment to the internationalization process. (Johansson & Mattson 1988, 295-297)

4.3.2 The learning effect

The stages theory presented in earlier emphasizes experiential learning by focusing on market knowledge and commitment and the internationalization in a systematic process; as companies gain market knowledge, they commit more resources to the market which influences the degree of internationalization of a company. In the network theory, learning frequently occurs through

companies' business networks. Johansson and Mattson (1988) have argued that a highly internationalized company is positioned within a foreign network and thus enjoys direct relationships with foreign actors. By having a network orientation and identifying the roles and strengths of the actors within it provides the company with an understanding of possible constraints and opportunities for its operations. As companies build networks of relationships, they will recognize and learn about the capabilities and knowledge of others, and are thus able to speed up the learning process (Chetty & Campbell-Hunt 2003, 7). According to Welch and Welch (1996, 12) "*the development and utilization of foreign networks is… closely related to the learning process that underlines overall internationalization. Indeed, an important part of company's knowledge is often created and maintained through actors in its relevant networks.* "

It is assumed that business networks can assist companies in internationalization. Unfortunately it seems that many companies, especially SMEs, are not aware of all potential partners in their network and do not know how to exploit them. This leads to a fact that only few small and medium sized companies make effective use of their networks (Nummela 2000, 37).

4.3.3 Criticism

The limitation of the network model is that it is not predictive, but rather ad hoc by nature. It also doesn't explain the internationalization process of companies that do not have network relationships or the mechanism that companies use to identify non-network contacts further (Malhotra, Agarwal & Ulgado 2003). The model does not also acknowledge the importance of the decision makers' and the companies' characteristics in taking up the opportunities for internationalization that emerge from the networks (Arenius 2002, 36).

4.4 Born Global concept and the New Venture Internationalization

The born global concept is the newest attempt to explain the internationalization process. The phenomenon emerged in the mid 1990s as research identified an increasing number of companies that do not follow the traditional (incremental) patterns in their internationalization (i.e. Oviatt & McDougall 1994, Madsen & Servais 1997). Entrepreneurially inclined start-up companies were observed to pursue global strategies by bypassing some of the intermediate stages of internationalization to become significant global players in a relatively short time (Fillis 2001, 776). The born global approach challenges the traditional theories as the impact of technological, social and economic changes drive companies into international markets soon after foundation (Chetty & Campbell-Hunt 2004). It tries to explain why these companies operate in international markets rather than just in their home markets, which the stages models fail to explain.

Several reasons have been stated why it is important to study the born global phenomenon. First, it seems that an increasing number of companies can be classified as born globals. For example, Lindmark et al (1994) reported that nearly 59 percent of high technology start-ups in the Nordic countries began exporting within two years of establishment. Second, several authors have discussed the difficulties in explaining this phenomenon in terms of traditional internationalization theory. It is questionable how relevant i.e. the Uppsala model is in explaining the behavior of born global company (Moen 2002, 157). Newly established companies are also important in terms of generating innovation (Geust & Autio 1994) and developing competitive economies. Last, managers of these born global companies face many challenges when tackling problems faced by newly established companies as well as problems that arise when starting internationalization activities (Moen 2002).

4.4.1 Definition of born globals

There are many similar concepts introduced for born global companies with no clear definitional differences between the choice of terms. In literature they are sometimes referred to "international new ventures (INV)" (Oviatt & McDougall 1994), "infant multinationals" (Lindqvist, 1991) or "global startups". The concepts born global and international new venture are terms most frequently used in academic literature. INVs have also been defined as companies that "*from inception, seek to derive significant competitive advantages... from the sale of outputs in multiple countries*" (Oviatt & McDougall 1994, 49). Similarly, Knight and Cavusgil (1996, 11-12) conceptualize born global companies as "*small technology oriented companies that operate in international markets from the earliest days of their establishment*." These companies are observed to often manufacture high-technology products for a small niche in international markets, are entrepreneurial and perceive the world as one market, thus not confining themselves to a single country (Knight & Cavusgil 1996). In general, the born global view of internationalization holds that companies do not internationalize incrementally but enter international markets soon after inception, or they may not even have sales in their domestic market (Chetty & Campbell-Hunt 2004, 60). In this paper, the phrases born global and international new venture are used to describe companies, which are, by theoretic definition, international at inception.

One major area of controversy between the definitions can be found in terms of time, which is a usual criterion for defining a born global company. This time (span) is generally measured in years elapsed between the moment of first international sales obtained and the time of company's founding (Rialp-Criado et al 2002, 11). Some researchers advocate for a six-year period as eligible standard measuring this time span (i.e. Oviatt & McDougall 1997) while others have labeled born globals as companies beginning exporting only two years after foundation. The existence and behavior of this defined type of companies

has been reported in different sectors and geographical areas of developed world and as stated in a study by Luostarinen and Gabrielsson (2002, 7-8), born globals are not only high tech companies, as presented in some research, but can be found in many business areas.

4.4.2 Driving forces for emergence of Born Globals

There are different contributors permitting the emergence of born globals that have been identified by several authors (i.e. Oviatt & McDougall 1994; Madsen & Servais 1997). At least four of these contributors are of extreme importance and interrelated. Andersson and Wictor (2003, 254) have used these factors to develop a framework. According to them, these factors, together with concepts from earlier research, can help understanding of the born global phenomenon and form the foundation for theory development. The factors are summarized in FIGURE 13 below.

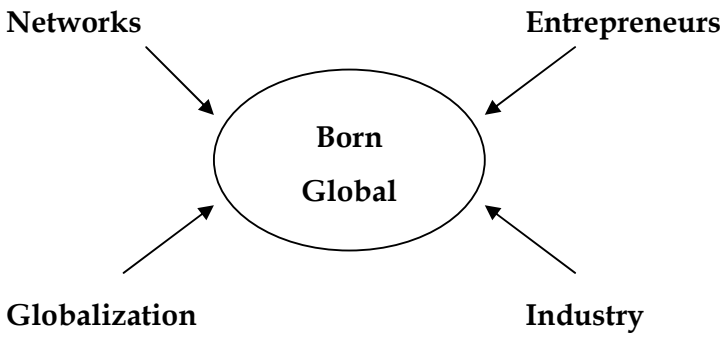

FIGURE 13 Factors contributing emergence of Born Globals (adapted from Anderson & Wictor 2003).

Born global companies are found in many industries. However, industry characteristics, such as industry growth rate, are of importance in the

development of born global companies. Research has also shown that born global companies are more specialized and niche oriented than other companies. The trends in globalization include the technological developments in areas of productions, transportation and communication technology. The globalization in marketing demand, marketing strategy and decreasing trade barriers make it easier for pursuing international strategies. These trends provide greater opportunities for a single company but are not enough to create a successful international venture. The increased importance of global networks and alliances has also been shown in many studies (i.e. Majkgrård & Sharma, 1998, Andersson & Wictor 2003). New companies are often dependent on relationships with financiers, suppliers and customers (Andersen & Wictor 2003, 225). Perhaps the most common denominator in born global research is the importance of people, most importantly the founder/entrepreneur that starts the company and his personal networks (Knight & Cavusgil 1996, Madsen & Servais 1997). These driving forces of born globals and the consequences of them have only been superficially explored and have not been integrated in theoretical frameworks. (Rialp-Criado et al 2002, 16)

The reasons why these companies internationalize early in their life cycle are many. Arenius (2002) claims that they must internationalize instantly to capitalize their knowledge advantage. In other words, they must move quickly in international markets because the results depend on getting to the market before the knowledge is copied by competition. Other reasons include i.e. industry conditions that may require international presence for the company to be competitive (Bloodgood et al 1996); the company may be operating in a narrowly defined niche which is not sufficient in a single country to profitably support company's product offerings; high R&D costs require the company to quickly achieve growth and the need for growth is likely to make early internationalization a necessity for survival. Also the hyper competitive markets and rapid product obsolescence require swift product penetration

which is simultaneously domestic and international (Preece et al in Arenius 2002).

4.4.3 International New Ventures framework

The research on born globals has in past focused mainly on describing and defining the new phenomena and the reasons for it, and comparing the born globals' international behavior with traditional theories on internationalization. Many researchers are stating that even though born global companies behave somewhat differently, they do not differ from other companies in respect to fundamental processes However, there are also authors arguing that the empirical observation of the born global companies is a challenge calling for a new theory (Rasmussen & Madsen 2002).

Building on previous theories and recent developments in the studies of entrepreneurship, Oviatt and McDougall (1994) have established a conceptual framework and a theoretical classification of International New Ventures. The International New Venture theory (INV) proposed by Oviatt and McDougall was the first attempt to theorize the concept with established elements. As presented earlier in this chapter, Johansson and Vahlne have argued that the Uppsala model best applies to early stages of internationalization with three exceptions. However, according to Oviatt and McDougall (1994) none of the exceptions seem to apply to international new ventures. They claim that international new ventures own certain valuable assets, use alliances and network structures to control a relatively large percentage of vital assets, and have a unique resource that provides a sustainable advantage and is transferable to a foreign location (McDougall & Oviatt 2003). At the same time, companies' resources are constrained by their young age and usually by small size. Further, new ventures have little or no experience in any markets, and therefore, according Uppsala model's standards, stage model needed adjustment (Oviatt & McDougall 1994, 51).

4.4.4 Necessary and sufficient elements

Four necessary and sufficient elements for sustainable international new ventures were proposed by Oviatt and McDougall. These elements are presented in FIGURE 14 below.

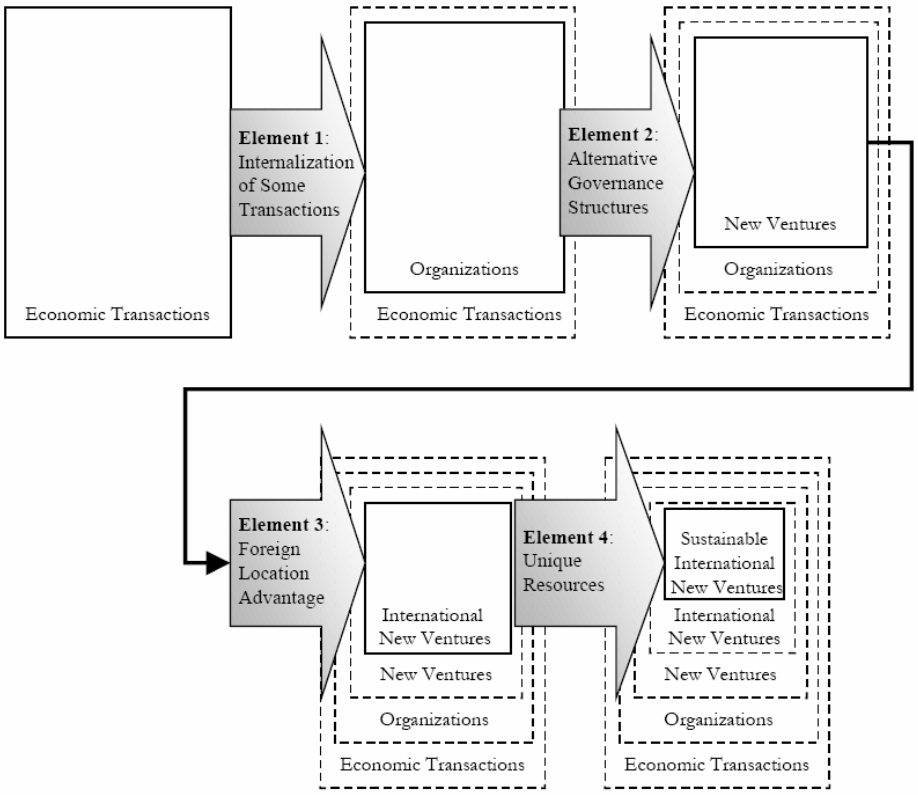

FIGURE 14 International New Venture framework (Oviatt & McDougall 1994, 52).

The first element is the most basic and it describes how a company internalizes some transactions. All companies function in the market, needing inputs to be used in production and providing their own output for sale in the markets.

Thus, the purpose of the company can be said to consist in acting in the market. According to Oviatt and McDougall (1994, 53) internalization element is often used to explain foreign direct investment, the ownership of assets located in foreign countries. However, even though the ownership of foreign assets is not a defining characteristic of international new venture, an organization must own some assets of value to be able to exchange in an economic transaction.

Alternative governance structure is the second element in the framework. New ventures often lack sufficient resources to control many assets through ownership. New ventures tend to internalize, or own, smaller percentage of essential resources than mature companies do. Therefore, new ventures often rely on alternative modes of controlling these vital assets. A powerful resource-conserving alternative to internationalization for new ventures is the network structure. (Oviatt & McDougall 1994, 54-55)

The third element, the foreign location advantage, distinguishes international from domestic organizations. The element describes the fact that companies are international because they find advantages in moving some resources across national borders to be combined with less mobile resources or opportunities. These resources can be such as raw materials, knowledge or intermediate products etc. (Oviatt & McDougall 1994, 55-56)

According to Oviatt et al, a company needs to have unique resources (the fourth element) in order to gain sustainable competitive advantage. Knowledge, for example, provides location advantage as it has great mobility once produced. It can be easily combined with less mobile resources in multiple countries and can thus create differentiation or cost advantages for the company. However, because knowledge may not remain unique for long, the international new venture needs to limit the use of its knowledge by outsiders in many countries for it to have commercial value. In general, this can be limited in four ways: 1) by direct means; patents and copyrights etc, 2) by imperfect imitability, 3) by

licensing, and 4) by the use of network governance (as discussed earlier). (Oviatt & McDougall 1994, 56-57)

Oviatt and McDougall have also identified four types of international new ventures. The different types vary according to the number of countries involved in the companies' operation and according to the number of operational modes (value chain activities in the FIGURE 15) these companies coordinate across countries. The categorization is illustrated in FIGURE 15 below:

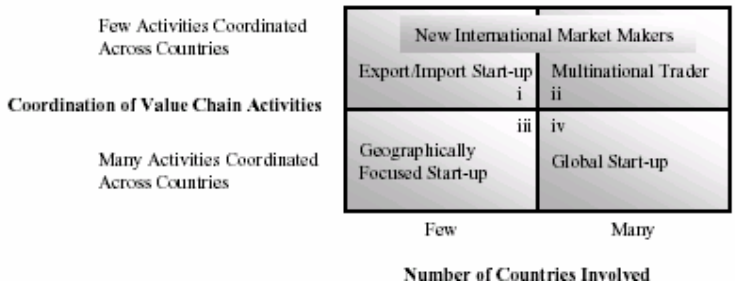

FIGURE 15 Four types of international new ventures (Oviatt & McDougall 1994, 59).

The new international market makers are traditional importers and exporters that profit by moving goods to nations where they are demanded. These companies can be either export/import start-ups or multinational traders. The former focus serving a familiar few countries, while the latter serve multiple countries and are constantly scanning for new opportunities. The geographically focused start-ups derive advantage from serving well the specialized needs of a particular region while being more geographically restricted to the location than the multinational traders. The global start-ups have extensive coordination among multiple organizational activities that take place in various locations. These companies proactively act on opportunities

instead of reaction and gradual increase of commitment. (Oviatt & McDougall 1994, 57-60)

Madsen and Servais have made an interesting remark concerning the Born Globals:

…when studying a Born Global firm, the time perspective should be extended beyond its birth. Probably, many of its "genes" have roots back to firms and networks in which its founder(s) and top managers gained industry experience. Basically, in many instances it may be doubtful whether a Born Global can be considered a new company. In a legal sense the company may be new, but were it skills and capabilities not often born and matured prior to its legal birth? (Madsen & Servais 1997, 573)

4.5 Industry effect on internationalization

When an industry is growing rapidly there are more born globals emerging. In the early stages of an industry life cycle it is more likely that a company first establishes its business in the home market and only after securing its operations there it will into international markets. In the early stages of an industry lifecycle there is also less competition and therefore it is easier to "survive" within the domestic market. As the industry grows, more competition emerges especially in markets with high technological know-how like in Finland forcing companies to internationalize faster to survive in the increasing competition. Therefore it is very likely to find out that older software companies established before 1990 have gone their internationalization process following the Uppsala model's stages to some extent. On the other hand, companies established in the late 1990s and later, during the rapid growth period the software industry has experienced, are very likely to companies that could be identified as born globals. The optimal internationalization strategy and the varying processes between companies could be explained partly by the changes in the software industry.

An important question in a company's internationalization strategy deals with which markets should they expand to and in which order. The different internationalization theories, including the ones presented in this paper, suggest different actions. Although the emphasis of this thesis has been on the level of company internationalization, the context of an industry should not be overlooked. It is argued that the appropriateness of these reviewed theories depends on the industrial context to which it is applied (Andersson 2003). Companies operating in mature industries and companies in growing industries face different situations. Furthermore, according to Andersson, companies in an early stage of internationalization in a mature industry can succeed by means of a slow, incremental internationalization. In growing industries, the situation is quite different. The industry is volatile and it is difficult for companies to keep up with the changes. The market choice in the early international stages is therefore a consequence of the companies' internal resources. The importance of the knowledge of the entrepreneurs and the key personnel, as well as networks in different markets is significant (Andersson 2003).

4.6 Summary of internationalization theories

It is some what difficult to compare the theories as they have focused on somewhat different aspects of the internationalization process. The stages theories have tended to focus on the manifestation of the model whereas network model have focused on the key decisions of international market selection and the choice of market entry. Born global approach then rather has focused on the classification of the born global company. The stages theory posits a relatively risk-averse, reactive management team who resist venturing beyond the scope of prior activities. Thus, a company is more strongly compelled to avoid threats to survival rather than to seek new opportunities for growth. Conversely, the new venture internationalization theory implicitly focuses on the set of young companies that driven more by the desire to

identify and pursue opportunities for growth outside their domestic markets than by the desire to avoid uncertainty that might threaten survival. Some differences between the Uppsala model, the Network approach and the International New Venture theory are summarized in the TABLE 4 on the next page (adapted and modified from Chetty and Cambell-Hunt, 2004).

The greatest difference between the Uppsala internationalization view and the network model does not concern the process nature but the empirical observations on which the internationalization process view was based initially. Since the country specific barriers do not exist, the network model does not say which countries companies will enter and expand in. Rather, it expects that companies organize their business to develop, support and coordinate relationships. It is expected a company to develop in response to the development of important relationships. This development is not related to a specific country but to network relationships. (Johansson and Vahlne 2003)

Whether a company first develops within the home market or goes directly to international markets, is perhaps the biggest difference between the Uppsala model of internationalization and the way Born Globals progress. The Uppsala model does expect a company to be firmly established within the home market before internationalization whereas Born Globals may not have domestic sales at all. Also whether experience is needed, divides the views. According to Uppsala model no international experience is needed as the company will learn gradually during the internationalization process. The International New Venture expects the founder of a born global company to have previous international experience which will enable more rapid internationalization. The Network approach explains that the experience can be supplemented by the experience of other people within the network. Based on this, it could be stated that if the company doesn't have experience in internationalization, it is more likely to proceed with gradual, risk-averse internationalization and that only

experience, within the company or network, will enable more rapid internationalization process.

TABLE 4 Differences between internationalization models.

Internationalization character	Uppsala model	Networks	Born Global
Home market	Domestic market developed first	Domestic networks developed	Domestic market not important
Experience in internationalization	Not needed or expected	Other players in the network have experience	Founder has experience in relevant international markets
Initiation of internationalization	Reactive reasons, i.e. company responds to an order	Other companies in the network internationalize	Companies proactively look for international growth opportunities
Objective of internationalization	Survival and growth		Competitive "first mover" advantage
Degree of internationalization	International markets developed serially,		Many international markets developed simultaneously
Pace of internationalization	Gradual and slow, single market at a time	N.a	Rapid, many markets at once
Psychic distance	In order of psychic distance	No country specific barriers	Psychic distance irrelevant
Networks	Used in early stages, gradually replaced by own resources	Companies develop in response to networks' development	Global reach requires comprehensive networks
Time to internationalize	Not crucial to success: late	Influenced by network relations	Crucial to success, within few years of inception
Level of analysis	Single company	Single company within industry context	Single company, industry in emergence of Born Globals

There is some controversy between the models regarding the optimal timing of the initiation of the internationalization process (Autio & Sapienza 2000). The Uppsala model favors late initiation, the INV emphasizes the need of early internationalization and the network model really says nothing about the timing at all. Eriksson et al. (1997, 353) for example suggest that companies are better off delaying international growth:

"*many small mistakes in gradual internationalization allow management to form more realistic perceptions than do a single great mistake in a leap-frogging [according to INV] approach to internationalization*."

On the other hand, McDougall & Oviatt (1994, 484) emphasize the learning factor in early initiation of internationalization for the later development:

"*In the light of path dependence of competence development, new venture founders should consider whether establishing a domestic new venture with plans to later internationalize will be as successful a strategy as establishing a new venture that is international from inception*."

There is also difference on the level at which the process of internationalization is examined. The Uppsala model concentrates purely on internationalization of a single company whereas the network approach and International New Venture theory take the effects of the industry into account.

Despite all the criticism towards viewing internationalization as a gradual process, for example, Bengtsson (2004, 29) has claimed that the fact is that no theoretical alternatives have emerged to explain the internationalization process better than the traditional Uppsala model. On the other hand, according to Johansson and Vahlne the old models of internationalization process can still be applied fruitfully when integrated with the network approach. The scholars who originated the Uppsala model have said:

"we have a situation where old models of internationalization processes are still applied quite fruitfully at the same time as a number of studies have suggested that there is a need for new and network-based models of internationalization. We think it is worthwhile to reconcile and even integrate the two approaches" (Johanson & Vahlne 2003, 84).

There are many other researchers that have actually also proposed an integrated internationalization theory based on either two or all of the presented models. Autio and Sapienza (2000) have proposed an integrated model for the internationalization of entrepreneurial (small) companies. According to them, there is support for the Uppsala model in the later stages of company internationalization, whereas the International New Venture has influences on internationalization patterns in the early stages of internationalization (Autio & Sapienza 2000). It seems that none of the theories presented here can explain and cover internationalization process of all types of companies. Also Coviello and McAuley (1999) conclude that even though in studies only one framework is usually used, the internationalization could often be best understood by using multiple frameworks.

5 GROWTH AND INTERNATIONALIZATION IN SOFTWARE COMPANIES

This chapter discusses the aspect of company growth further, especially in the context of software business. As an example of this, the McHugh's software business growth model is presented. The possibility of growth through internationalization is discussed along with some earlier studies of software company internationalization that are reviewed.

5.1 Growth aspects

The term growth company is often used for a business that has an outcome and personnel growth of 20% annually. Growth itself is regularly seen as a necessity or a self-evident goal of actions. But surprisingly many studies show that entrepreneurs are often happy with a small self-manageable company, which gives them just enough profit to make a living (i.e. Viitala & Jylhä 2004, 195). Not very ambitious business type, but quite a few entrepreneurs are happy with this kind of action.

Finland has too few rapidly growing companies and the lack of Finnish entrepreneurs and their unwillingness for growth has been increasingly discussed (i.e. Junkkari 2004, B9). According to Finnvera and Finnish Entrepreneurs (Suomen Yrittäjät) only 7% of Finnish SME companies are strongly willing to grow. This is contradictory to the fact that typically entrepreneurs within the countries with good economic situation and high innovation system are more willing to grow and internationalize. Low number of growth ambitious companies is also surprising since Finland's research and development efforts are one of the highest when measured at global level. (Junkkari Marko, Helsingin Sanomat Nov 1, 2004, B9)

The most common reason, among Finnish companies, for unwillingness to growth seems to be that owners feel that the company is already big enough.

Depression in 1990s was hard to take on for many entrepreneurs, who are still acting cautious and risk avoiding. It could be said that Finnish entrepreneurs have become almost too cautious with growth and especially with financial issues. Another reason for entrepreneurs' wary behavior could be their age distribution; older entrepreneurs do not want to invest any more money to their companies. New younger generation of entrepreneurs with new visions, readiness to invest and grow, would be very welcomed to Finnish economy (Junkkari 2004, B9). However, it should also be noted that the ICT sector and also the software industry have already a new pool of entrepreneurs that believe in their own skills and are more willing to take a chance. Perhaps the low entry barriers to industry (discussed in chapter 2) are one reason to this.

Companies' behavior cannot be reflected directly from theories. Many software and also other companies appear to be happy remaining at lower development stages such as the Expert-coder or the Utility-developers stage, proposed in Nambisan's (2002) model. One reason for this behavior is the fear of loss of control, which is associated with growth. There is conflicting views between academic literature and empirical studies as most life cycle and growth models take the willingness to growth for granted, whereas the empirical studies emphasize a general reluctance to grow. (Nambisan 2002, 151)

If a company decides to grow, the growth should be controllable. A growth that is too fast can hurt company's employees and ruin the good atmosphere of the company. The essence of the company should be kept in mind, instead of just concentrating on growing bigger and bigger without thinking about consequences is not always the right solution. According to Viitala and Jylhä (2004), the decision to grow must be made only if the company is firmly established. The ambition for growth needs a strong business culture to support it, the full support and commitment of the entire company are also essential. (Viitala & Jylhä 2004, 197-198)

Sometimes company's organic growth is not fast enough or it does not occur at all. Methods enabling faster growth are networking with other businesses, merger, and acquisitions or joining a chain business. Radical changes in the renewal of a company's strategy bring better results than making small insignificant changes, which really do not remove the real problem. (Viitala & Jylhä 2004, 195, 197)

Generally companies do want to hold their market share and stay competitive, resulting in that some kind of growth and renewal is needed. Growth ambitions can be seen realized in a search for new customer segments and market areas (Viitala & Jylhä 2004, 195). The immediate goal for any small to medium-sized enterprise (SME) is to survive and maintain its independence. As the home market is quite limited, Finnish companies often start looking for new customers and markets abroad; growth often happens through internationalization. The transition from a small domestic firm to an established and committed international company is a major step for any SME. Internationalization throws up a number of challenges for managers of such firms.

Also according to Luostarinen (in Gabrielsson 2004, 24), internationalization can be seen as a growth strategy from the company's point of view. Luostarinen has proposed a four stage growth development process for Finnish companies. In the first phase growth is attained through the unrelated diversification of a business portfolio within the domestic market. The second stage involves the company internationalizing in a number of unrelated businesses within the home continent. In the third stage, the company will further internationalize with a focus on a limited product business area and in the last stage, the company is expected to continue internationalization but diversify into related business area. (Luostarinen in Gabrielsson 2004, 24)

5.1.1 Industry Growth

Fast growing industry is a solution when rapid growth is wanted. (Viitala & Jylhä 2004, 197) Software industry's growth rate is high, even though investors are careful. The people with good business skills and/or software knowledge do know the potential of the business and are not afraid to invest on it.

Also Greiner (1972) notices the impact between high and low growth industries. As seen in FIGURE 16, the life cycle curve of the company in high-growth industry is much steeper and maturing occurs sooner than for the company in low-growth industry.

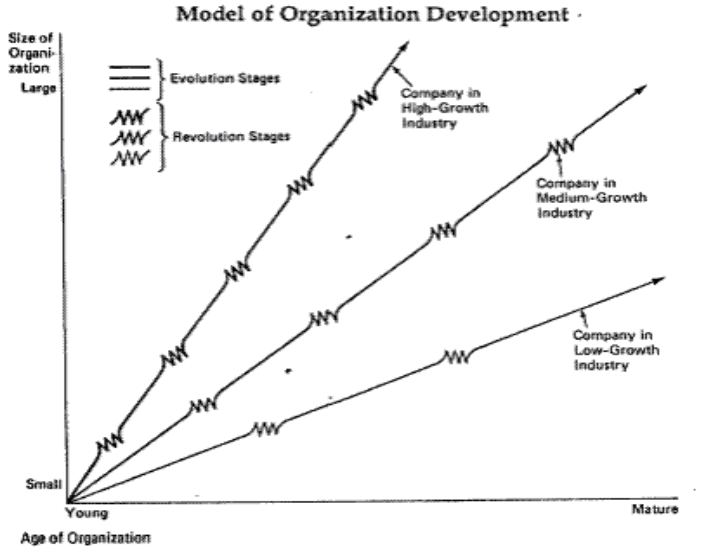

FIGURE 16 Model of Organization Development (Greiner 1972, 38).

Generic company growth and evolution has been studied from several perspectives. TABLE 5 on the following page shows the important determinants of the *software firm* growth and evolution.

TABLE 5 Determinants of software firm growth and evolution: a literature review. (Nambisan 2002, 152).

External Factors	Internal Factors
• **Industry Characteristics** (market structure, competitive environment, etc.)	• **Founding Conditions of the Firm** (initial technology strategy, initial financial resources, etc.)
• **Technology Characteristics** (technology life cycle, technology standards, etc.)	• **Strategic Factors** (strategic aggressiveness, strategic alliances, product strategy, etc.)
• **Economic & Technological Infrastructure** (venture capital, manpower resources, telecommunication infrastructure, etc.)	• **Firm Resources & Competencies** (managerial capabilities, development processes, marketing skills, etc.)
• **Regulatory Infrastructure** (taxation& fiscal incentives, intellectual property regime, etc.)	• **Internal Stakeholder Characteristics** (personality traits, demographics, experience, innovation-orientation, etc.)
• **Regional Culture & External Stakeholder Characteristics** (innovation-orientation, experience, regional networks of learning, etc.)	

5.2 McHugh's framework for software company growth

Peter McHugh (1999) has developed a framework to explain how software companies grow. The framework takes a perspective of maturing into a leading software company that started in a small home market. The framework identifies the required business strategies for each key stage of company development. The framework was developed based on experiences of some 20 software companies in UK. The case companies were not selected on the criteria of being the best as some cases may not have been very successful at all. The focus was on companies which mostly sell software products, not services, and

were, at time of the study, experiencing growth. Moreover, selected companies represented different decades in order to examine if the characteristics had changed over time. (McHugh 1999, ix-xii)

According to McHugh, the early stage software venture goes through a sequence of preliminary growth stages. These stages are shown in FIGURE 17 below.

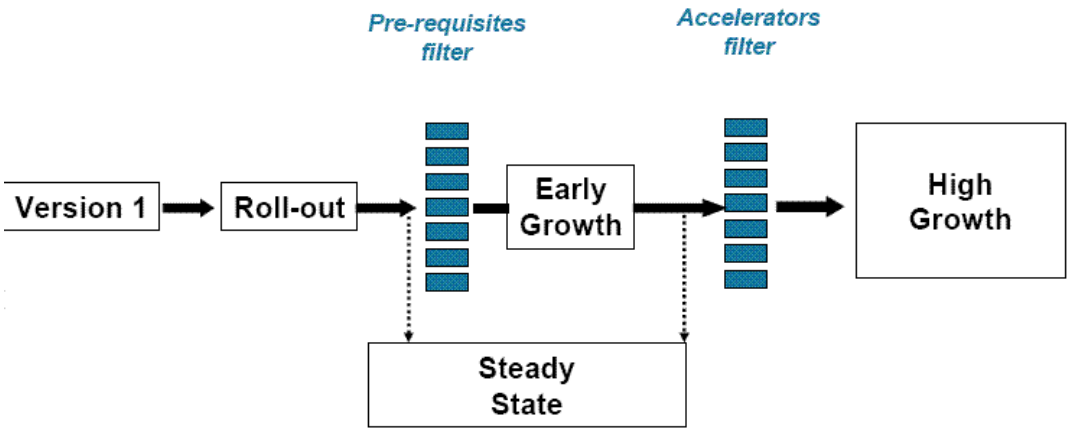

FIGURE 17. Early software growth profile (McHugh 1999, xxi)

Version 1, Roll-out, Steady State, Early and High Growth are possible phases that a software company goes through gradually. Before each growth period there are imaginary growth/success filters which screen companies (McHugh 1999, xxi). Most software companies emerge from the Version 1 phase to Roll-out when introducing their product to initial customers. After this, company's future is determined by how it passes the pre-requisites filters. Most companies are not able to pass these filters and fall into the Steady State zone. Some companies remain in the zone either by choice or due to some other inherent constraints. The companies that do pass the pre-requisites move to further growth stage until hit the second filter. Again some companies drop into the Steady State, while others that have been able to put in place the success

accelerators will break into the High Growth phase. The really successful ones will move onto further development stages where the business continues to grow. In addition to the stages, which each has its unique characteristics, according to McHugh there are five strategies for success which differentiate the most successful companies from the mediocre ones (McHugh 1999, xxvii).

The three fundamental strategies, customer-centric product, balanced management and equity finance are required to build, what McHugh calls, "an all-weather ship". The fourth strategy for success is executing a winning business model, and the fifth navigating to export markets. In the following chapters all these aspects are described in more detail.

5.2.1 Growth stages and filters of success

The Version 1- zone is used to describe the start-up phase during which the emphasis is put on getting the first version of the product completed and ready to ship in the fastest time possible. According to McHugh it is all too often that companies try to get the product 110% complete, especially in the case of companies with heavy technical focus. All software companies step onto the growth escalator when the founding team assembles or an individual forms the company and start developing the product behind the concept. A common problem during this early stage of company development is that the company gets distracted, due to i.e. financial issues. The critical issue is getting the first version of the product ready. If the company is able to do this, it can be assumed that it will move fairly quickly into the next phase, the Roll-out zone. But to link these two phases, the founder(s) need to first secure some initial reference point. If there is strong market interest towards the innovative product or the founder has previous experience in the market, the process can be quite easy. But in general, the lack of reference can create credibility problems and bring the company's process to a halt. Therefore, identifying and targeting possible early adaptors effectively is very important. After securing

some reference sites, the company can move into a new development phase and start getting real customers and revenues into the company. (McHugh 1999, xxii-xxiii)

The Roll-out zone brings in the key strategic decisions about the choice of business model. McHugh claims that it is often impossible to understand all the issues involved in selling, implementing and supporting a new software product. Usually during this phase companies start looking for strategic alliances and channel partnerships. Most companies develop gradually throughout the phase by adding new employees from time to time and putting in place management structures. Companies should hire salesperson soon to secure further sales. In some cases a company goes through the phase in matter of months, but in general this is a gradual process of building customer base until the company reaches a point where it is viable and firmly established. At this point the future direction is determined by whether it passes the first growth filter (the pre-requisites for success, discussed later). Those companies that do not pass through the filters for what ever reason drop into a Steady State Zone. (McHugh 1999, xxiii)

The Steady State describes companies that continue to grow incrementally by only occasionally adding new employees. In some case the emphasis is on securing the company's survival and it is unlikely for the company to take off in a significant way. Sliding into the Steady State is normally because of weaknesses in at least one of the four prerequisites for success:

- **Ambitions** to grow the business
- A strong **Product** offering
- An effective **Management** team
- Access to sufficient **Funding** to support growth

If the potential of the business is restricted, the company stays in the Steady Zone, some might even go out of business. But it is also possible to enter high

growth period for a while, then fizzle and fall back into the gradual growth mode. For most companies, however, the business stays steady and the founders make a decent living. These types of companies are often termed *lifestyle businesses* and it is actually the territory where most software vendors live. (McHugh 1999, xxiv)

Those software companies that have the success factors in place move into early growth. This growth period can be, in some cases, dramatic but it is usually based on domestic market. Some companies are able to gain market leadership position in the dome market, and then they need to decide whether they want to reach for the stars. There is always the option of an exit (selling the company) if further growth is considered too demanding or beyond the realm of the current business. (McHugh 1999, xxiv)

According to McHugh, timing can have an important role in deciding whether to seek further growth, in particular when the target market itself goes into a High Growth phase. If the decision is to pursue further growth, the company will need to pass through the second filter or it will fall back into the Steady State. (McHugh 1999, xxv)

There are two principle success accelerators that a higher growth seeking company need to pass:

- A flexible, dynamic **Business Model**, which will most likely require partnerships and possibly the use of indirect channels.
- A precise **Export Strategy**, as it is very likely that the high growth phase is started with a decision to go after export markets in a systematic way.

For some, the export activities can start opportunistically but generally a company commits to a significant effort of developing international markets as means of getting into high growth zone.

According to McHugh, growth can be attained in to ways, via organic growth generated from within the company's own means or by acquisitions. Organic

growth is usually slower but more manageable and less risky. But for some software companies slow gradual growth is not an option if the strategy is rapidly achieving mass and a leading market position. Acquisitions are a commonly used tactic in the software business. (McHugh 1999, xxvii)

5.2.2 An "all-weather ship", business models and export strategy

"An all-weather ship" is build from the three fundamental strategies: customer-centric product, balanced management and equity finance (FIGURE 18).

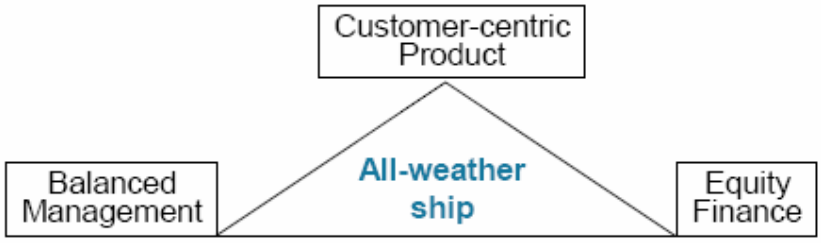

FIGURE 18 All-weather ship (McHugh 1999, xxvii).

1. **Powered by a customer-centric product.**

The Version 1 product should be ready as soon as possible, to bring some money in and avoid pre-revenue state. Strong software product has five characteristics: it meets the market needs, delivers uniqueness, keeps up with market development, evolves continually and is rooted on familiar territory. (McHugh 1999, 5-6)

Product should always target the specific market need. McHugh names University programs and researchers as a source of new technology. This is especially the case in some small software companies in Finland. Due to

software industry's fast development and innovative nature, the product has to include some new or improved functions. Evolving product's functionality and technical requirements is a necessity to meet new market opportunities. When considering adding new products to the product line, one should remain in the familiar product areas or market segments based on existing segments.

2. **Driven by a balanced management team.**

> *"As a rule, populating the early management team with people who have prior business experience greatly minimizes the need for disruption during the growth stage when the need for real management skills becomes most apparent."* (McHugh 1999, 35)

Manager of the software company needs to handle well the areas of product development, fund raising, sales and marketing, customer support, partnership building and also human resource management. At the beginning of the software company's life, there is usually not much than a vision. But when entering to the high growth, management issues become crucial. The founder's or entrepreneur's role changes from a visionary to coordinating and directing CEO. McHugh lists management requirements according to number of employees in the company. Typically the most dramatic growth occurs in between 50 to 150 employees. In a company which has up to 25 people, limited formal management is needed and teamwork and creative management is valued. When the number of employees rises up to 250, company often has formal matrix structure combining function and geography. Locally based functions are established in key geographies, which are later on operating under country structure. Start-up management includes entrepreneur/founder who is able to convey his vision. Combination of visionary CEO complemented by a details man and the rest of employees with a mixture of skills works best in the star-up phase. AS the company grows and moves out of star-up mode, the degree of management complexity multiplies as employee numbers grow and

international operations are added to the organization structure. In the growth stage, management team consists of CEO, whose role in terms of stage development has to be examined continuously, experienced founders and a supporting/management team consisting people with technical skills, sales and marketing, and financing abilities. FIGURE 19 shows how the balanced management is structured in start-up and growth phases. (McHugh 1999, 29-44)

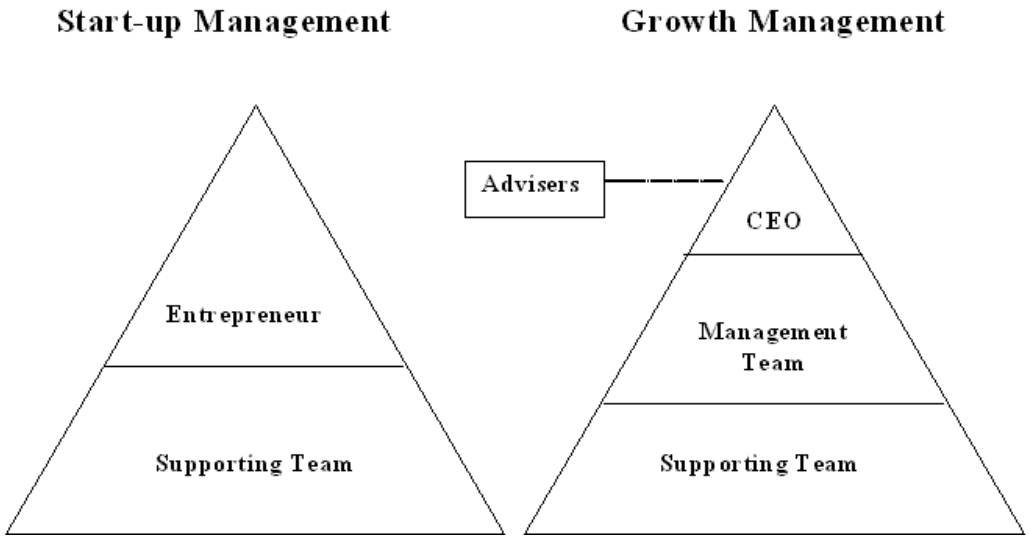

FIGURE 19 Balanced Management Team (McHugh 1999, 27).

3. Fuelled by equity finance.

Options for gaining funds in the start-up stage include the help from business angels, venture capital money, trade investor's involvement or undertaking an IPO (Initial Public Offering). As this thesis does not emphasize the financing of software companies, this matter is not further explained here.

4. Business models and securing market access.

"Now having built an all-weather ship capable of sustaining a high growth stage, the challenge is to bring the offering to market and build up a customer community in a profitable way." (McHugh 1999, 72)

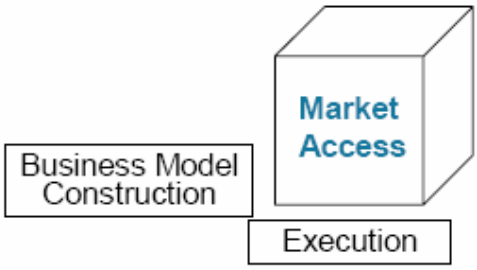

FIGURE 20. Securing market access (McHugh 1999, xxvii).

The fourth strategy for success is executing a winning business model (FIGURE 20). Two dominant factors drive vendors towards their chosen business model and which state the most suitable mix of direct versus indirect control. These factors are product price point and sales cycle. Setting the price point is important decision for the start-up company. By product price point is meant here the entry level deal size since it can vary a lot. Sales cycle means here the process of converting customers. In the starting company, the likely sequence in a typical sale is important. Long sales cycle can be caused by e.g. high price of the product, immature technology, or complex product. Two secondary business model factors can also influence the selection of business model. Degree of strategic commitment to geographic market is a decision made regarding which markets will command greatest attention, since no company can afford to cover all interesting countries. Availability of resources and skills is the other secondary factor affecting on choosing of business model. (McHugh 1999, 75-83)

5. The export strategy.

According to McHugh (1999), the decision to develop international markets signals a major new phase in a company's development. Companies that do not seek to develop export markets, future growth is severely constrained. The potential of international business is significant as for most software products the customer needs are fairly similar regardless of geographic location. Internationalization, however, requires a lot especially from an early state software company. McHugh's advice is to build the international infrastructure in a measured way by first focusing on those priority markets of greatest relevance and only later expand to markets of lesser importance. There are three major questions that a company needs to think about before initiating international activities; when to start, where to target and how to enter the target market. Of these the timing of internationalization is reviewed in more detail. (McHugh 1999, 143)

McHugh claims that it is relatively rare for software start-ups to start exporting immediately (see Bell 1995; Coviello & Munro 1995; Oviatt & McDougall 1994). A more common route is to evolve from a domestic success, often by establishing home market leadership first. This is because it is cheaper to learn many lessons, regarding the product, implementation and maintenance, at home rather than trying to solve them from a distance. Another significant reason for securing the home market first is that it allows the company to develop foreign markets from a position of strength in terms of finance and existing reference customers. (McHugh 1999, 145)

When domestic market leadership has been attained, further domestic growth potential may be limited. At this time the company needs to make a decision between a secure, lifestyle business and aiming at international markets. (McHugh 1999, 145)

McHugh also acknowledges the Born Global companies, he states that there are companies that are born global in their thinking, i.e. are harboring world leadership ambitions from inception. He states that especially for technology product companies international perspective is critical for the business to have long term sustainability (McHugh 1999, 146). Regardless of whether exporting evolves as natural progression of the business after establishing strong position in home market or whether the company is so called Born Global, companies tend to go through five distinctive phases (FIGURE 21 below) in building their international business (McHugh 1999, 147).

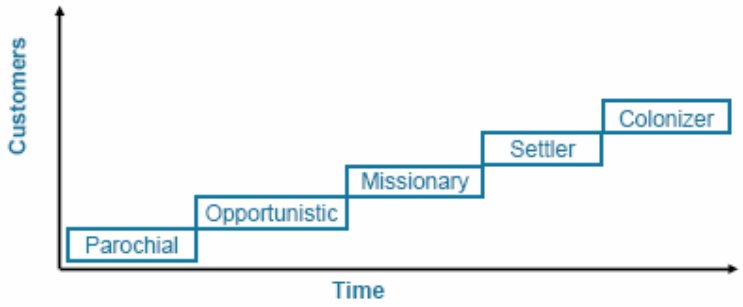

FIGURE 21 The five stages in exporting (McHugh 1999, 147).

There are no definite rules for how long one stage lasts but that it is dependent on the product and company characteristics. According to McHugh, most companies try to first establish market leadership in the home market, this is the *parochial* –stage. During the stage companies are still experiencing practical problems, such as limited employee and financial resources, which usually makes it impractical to start foreign expansion. However, for many companies this stage is relatively short and the foreign markets become increasingly more interesting. The next stage, *opportunistic*, is when first foreign sales usually happen. The first sales can be totally unplanned as a result of unsolicited orders from foreign companies or from existing customer's foreign subsidiaries etc.

Some companies are more actively looking for foreign resellers to build confidence in potential markets. The third stage, *missionary*, is when the software company tries to build partner networks and secure initial reference customers on which to build sustainable business upon. In the *settler* –stage, companies start to reinforce physical presence in the chosen country and continue building customer base there. Local managers should be appointed to run the operations of the subsidiary. The last stage of exporting is the *colonizer* – stage. By this time the company has secured a fairly stable position in one country and should then move onto the next priority market. (McHugh 1999, 147-148)

McHugh emphasizes that countries need to be prioritized as either strategic (should be targeted immediately) or tactical (can be left to be targeted in second or third wave of export effort). After deciding which country to target first, maintaining focus and commitment in terms of financial, managerial and employee resources allocated to the opportunity, is critical As many early stage exporters have limited resources available, targeting too many markets at the same time may weaken the overall effort and result in failure. Therefore, according to McHugh, companies, even those aiming at global business, should focus early effort on limited key markets and continue to deal with other one opportunistically. (McHugh 1999, 148)

Another issue that company need to consider is how to best enter the chosen target market. This is usually a question of how much direct involvement the company wants to have in a given country as opposed to relying on third parties. When studying the export behavior, McHugh came to the conclusion that the most successful internationalization efforts seemed to be a result of the company being physically present at least in the most important markets. He also point out that there is a difference between the initial market entry mode and the subsequent modes; many companies employ distributors and resellers

to sell their products but only after first establishing the base operations in the country themselves (McHugh 1999, 156).

5.3 Software company internationalization

The validity of the internationalization process models is reviewed in the context of software business in this latter part of the chapter. In his study of small computer software companies in Finland, Ireland and Norway, Bell (1995) tested the applicability of the stages model for these companies and found that the theory does not explain the internationalization of small computer firms. In addition, Coviello and Munro (1997) have argued that the internationalization of small software companies is manifested differently from those patterns generally found in literature (the stages model) and offer the network perspective. Others (i.e. Oviatt & McDougall 1994, Kuivalainen 2003), in turn, have made a remark that the stages model is not valid for companies that are international from inception and the concept of born global is brought up to the discussion.

5.3.1 Traditional internationalization through stages

In an increasingly global environment, the relevance of stage theories has been questioned, especially in relation to the internationalization of high technology and service companies. Bell (1995) carried out a cross-national study into export behavior of small computer software companies in Finland, Ireland and Norway. Small open economies with limited domestic markets and small-firm bases, these countries provided a good basis for a comparative study. As the countries are geographically isolated from their principal export markets, they also provided interesting policy perspectives on small-company internationalization.

The objectives of Bell's research were to explore the initial export decision of small software companies together with the internationalization process of those companies. The interviews revealed several important factors, which strongly influenced companies' initial and subsequent market selection decisions. These factors were client followership, sectoral targeting and computer industry trends. The client followership occurred when companies entered new markets because of the international strategies of their domestic customers. The interviews provided strong evidence that domestic client followership not only encouraged small software companies to begin exporting in the first place and determined the "choice" of export market but also that it had a significant influence on the market entry mode. Other reasons for starting exporting were unsolicited order or enquiry from abroad. In this type of situation, the behavior of the companies was also essentially unplanned and reactive.

At the initial stages of internationalization, there was evidence that contact with foreign suppliers to obtain hardware, local software distribution rights or production licenses led to export initiation. In addition, about 10 percent of companies began to export before they had obtained any domestic sales. This was especially true for companies that were targeting very narrow and highly specialized niches. Thus, being firmly established in the domestic market was not necessarily a precondition for internationalization and export success. Neither the size nor the age of the software company had a significant influence on the decision to internationalize. Obviously, the dynamic nature of software business and the need to commercialize new applications as fast as possible were important considerations. All the evidence suggested that the software companies internationalize very rapidly, rather than in small incremental steps.

In relation to subsequent international development, responses indicated that small software companies were generally not inclined to change from their preferred entry mode as they developed new export markets. Thus, the

approach to a given market remained constant, even when the company had been operating there for considerable length of time. However, the research did reveal that the choice of foreign market entry modes and size-related human and financial resource constraints combined restricted many of the companies' international expansion capabilities.

In summary, the findings of Bell's study suggested that the stages model does not adequately reflect the underlying factors, which influence the internationalization patters of small software companies. No evidence was found to support the notion that small software companies progress systematically from exporting to other market entry modes as the stages theory would suggest. Bell concludes that the targeting of niche markets, the industry specific conditions and relationships with important customers are more influential than the Uppsala model reflects. Further, the findings suggest that the internationalization process is much less deterministic than the stages theory implies. He further proposes that the network model could have more merit in respect to software companies although not even that model explains the internationalization of companies without network connection. Thus he concludes that neither the stages model nor network theory fully explain the internationalization process of software companies. (Bell, 1995)

5.3.2 Network internationalization

Coviello and Munro have conducted two separate studies based on same New Zealand software companies but differing in the application of theory. The purpose Coviello and Munro's first study (1995) was to find new insights into international market development activities and growth of software companies by applying the network theory perspective. The second study (1997) was to examine how network relationships influence the internationalization process of software companies. Both studies were done by empirically examining the process and integrating the stage views of internationalization with the network

perspective in the context of software industry. Both researches were based on four case sites (software companies) and derived survey results of a larger number of New Zealand software companies, with histories both successful and unsuccessful internationalization. (Coviello & Munro, 1995, 1997)

According to the first study (1995), the case sites and surveyed companies reflected patterns of internationalization, which occurred rapidly, and across a number of international markets by linking them to extensive, established networks. Data also indicated that the interests of other players in the network influenced the internationalization efforts of software companies, with regard to both initial and subsequent market entry and mode of entry. In the second study where the two approaches were integrated (1997), the case findings made apparent that there were three stages of international activity within these companies. The companies had a largely domestic focus in the initial stage (year 0-1), but already clear intentions to internationalize. During the second stage (years 1-3) the companies became actively involved with their first foreign market and in the third stage (years 3-) they started showing evidence of committed involvement across numerous markets and international sales dominating their growth. As expected by the authors, some of the stages of the incremental view were found for the case companies but it was also obvious that the internationalization process was accelerated and some of the companies jumped over some stages in the process.

According to Coviello and Munro's findings (1995), the process of internationalization of software companies is rapid and often driven by existing network relationships. In other words, resulting from the companies' involvement in international networks, where major partners often guide market selection and provide mechanisms for market entry, software companies have experienced rapid and successful growth. The case companies were linked with established international networks early in their lifecycle,

which presented new market opportunities and established organizations as partners thus acceleration and shaping their international efforts.

5.3.3 Born global approach

In the study by Kuivalainen (2003), the target of investigation was defined as small and medium-sized Finnish companies operating in the ICT/infocom sector. Companies especially scrutinized were those providing value-added services in the field, i.e. software producers and content providers. The purpose of this research was to study the characteristics of the ICT industry and its effect on internationalization process. According to the study, it became clear that the sector was aiming at rapid internationalization. More than 90% of the respondents (in the sample of 171 companies) were hoping to become international in a two-year period. Further, it was found that companies following a niche strategy had more international business and more turnover from abroad. The high share of born globals supports the view that the sector is global by nature.

Based on the results, it was obvious that the most rapidly internationalizing companies tended to use exporting and partnerships as their international operation mode, which also supports the findings of Bell (1995). The general findings of the study support the arguments that knowledge-based industries tend to foster more companies aiming at accelerated internationalization and born global strategies (Kuivalainen, 2003, 82).

The empirical evidence also supports the notion that small knowledge intensive companies seem to become born globals, which target lead markets or enter domestic and international markets almost straight from inception. They also seem to have more international experience, operate in wider market areas and dispense resources better (Kuivalainen, 2003, 63).

In her doctoral dissertation of 2002, Arenius explored processes of the creation of social capital, the exploitation of the social capital and the early internationalization of new ventures. The study was built on data collected from four case companies, which were young Finnish software companies internationalizing before their sixth year of operations, i.e. case companies were classified as born globals. The focus of the study was on extending the emerging theory of firm-level social capital to an international context, social capital being the value of relationships. The aim was to understand how the social capital is created within the companies and to find out how the new venture companies internationalize.

The early internationalization process of the case companies was analyzed in terms of how the social capital influences it. Social capital was found to be highly beneficial to early international ventures. It allows the companies simultaneously to experiment and explore several options. Social capital may help a new company to internationalize faster and enter into more diversified markets. Its market selection may also be affected by international social capital.

The internationalization processes of the case companies differed from the Uppsala pattern. Case companies started internationalization in markets at various distances with varying resource commitments. They took several steps simultaneously and used several complementary entry modes. They were also quick to change their strategy, if one appeared to be unsuccessful. In addition, the internationalization process of the case companies did not follow the establishment chain proposed by the Uppsala model. For example, the case companies may never reach the international manufacturing stage, which is the final stage of internationalization process in the Uppsala model. The case companies were knowledge-intensive software ventures and for them manufacturing is the least demanding aspect of the operations.

The case companies target niche markets, but on the global scale. Venture capitalists were pressuring the case firms to internationalize quickly because venture capital financing is impatient financing, and returns on the investment are expected very soon. Thus, venture capital both enables and pushes for early and fast internationalization.

The market potential was the driving force of market selection. Case companies did not even include the psychic or business distance in their decision making. As predicted by the international-new-venture approach that new ventures use alternative governance structures to conserve resources when internationalizing, the case companies were found to favor the establishment of collaborative relationships, not only to save resources but also to overcome the liabilities of newness and foreignness.

The early international ventures studied in Arenius thesis did not necessarily grow in size. The companies were focusing on rather narrow markets offering perhaps only one or two software products, which are highly standardized and can be sold to several countries with only a few modifications. The manufacturing of the software does not require employing a large manufacturing workforce. Therefore, the case companies have been able to remain relatively small in terms of number of employees. Actually, growing in size has not been necessarily the business objective. The companies seek to generate profit, which does not have to result in increase in company size.

5.4 Software business and internationalization in growth theories

The studies focusing particularly on software companies have been quite rare in the past. As the characteristics of the software industry itself are quite unique, general theories and models of company life cycles and internationalization processes presented in the literature may not fit particularly well to software businesses. One of the company development models developed for software context is the framework by McHugh. As many of the general life cycle models,

it also has a stage wise approach in explaining the growth of a software company, thus having some similarities with the Greiner's Evolution & Revolution framework. There have not been many empirical studies testing the applicability of the older life cycle models in the software industry context. Further, neither Nambisan's or McHugh's models, the only models developed particularly to software business, have been tested by other authors, which makes it difficult to state whether either one really could be generalized to whole software business.

Concerning the company internationalization, McHugh is one of the rare ones to consider it. The framework takes a rather traditional approach to the internationalization process, having similar patterns with the Uppsala model of internationalization. However, the three studies presented in this chapter seem to reveal aspects that contradict the Uppsala model and therefore also the McHugh's view of the internationalization process. The studies concluded that internationalization of software companies can not be explained in terms of the Uppsala model but could perhaps, if further researched, be better explained with either the network or born global view of internationalization.

6 EMPIRICAL RESEARCH SETTING

This chapter describes the empirical research setting. The general research setting was introduced in the chapter 1.4. In this chapter we describe how the case studies were carried out and explain how the data was analyzed.

6.1 Research method

Research methods refer to systematic, focused and orderly collection of data for the purpose of obtaining data from them to answer research questions (Ghauri, 85). Methods are data collection through, for example, historical review and analysis, surveys and case studies, and techniques are procedures to gather data and analyze it. The goal of the empirical study in this paper was to gain understanding of the development (life cycle) and the internationalization process of the case companies. To do this a (multiple-) case study method and interviews as a qualitative data collection technique were used.

A case study method often involves data collection through several sources such as personal interviews and observations as primary data and industry reports and archives as secondary data (Ghauri & Gronhaug 2002). Case study is not suitable for all kinds of research, the research problem and objectives decide whether it is or not. A case study is useful for theory building and testing. Yin (1994, 11-13) has defined a case study as follows:

> *"The case study is an empirical enquiry that investigates a contemporary phenomenon within its real-life context, especially when boundaries between phenomenon and context are not clearly evident. The case study inquiry copes with the technically distinctive situations in which there will be many more variables of interest than data points, and as one result relies on multiple sources of evidence, with data needing to converge in a triangulation fashion, and as another result benefits from the prior development of theoretical propositions to guide data collection and analysis."*

Often a case study method is used when a researcher wants to study a single organization. It is, however, possible to study a number of organizations with regard to a set of variables identified or assumed prior the study. In this comparative case study the same question(s) is studied in all the case companies and then compared with each other to draw conclusions. The underlying logic of using the multiple-case studies is the same as using a single-case study: each case needs to be carefully selected so that it either a) predicts similar results or b) produces contrasting results but for predictable reasons (Yin 1994, 46). If all the cases turn out as predicted, these cases provide support for the initial set of propositions. If the cases are some what contradictory, the initial propositions need to be revised and retested with another set of cases.

6.2 Research design and procedure

The research design connects the empirical data to the initial research question of the study (Yin 1994, 19). According to Yin the research design of a case study method includes five important components: the research question(s), the propositions, the unit of analysis, the linking of the data to the propositions and the criteria for interpreting the findings. The overall research process in this paper uses the multiple case study design, data collection and analyzing techniques proposed by Yin (1994). The FIGURE 22 on the following page depicts the research process used in this study.

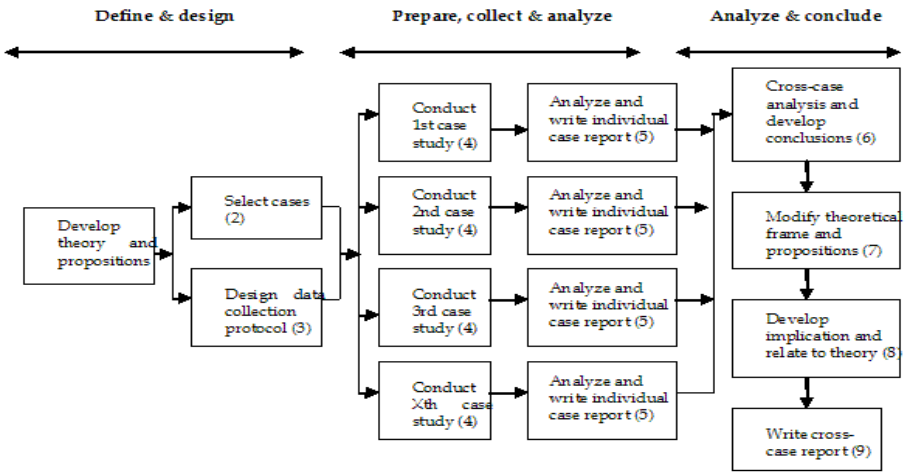

FIGURE 22 Multiple case study research process (adapted from Yin 1994, 49).

6.3 Sampling criteria

The case study selection was rather purposive than random. When selecting the case companies, several criteria were used. The first criterion the case company needed to be a software product company (see the definition in the chapter 2.2). The second criterion was that case companies are Finnish by origin or the business unit studied is originated from Finland. The next criterion was age. The selected companies should include companies that have been established in different years, to have a representative for different life cycle stages, and during different industry stages, to see if the industry has an effect on the growth and internationalization process. The last criterion was that case companies are attaining growth through internationalization and that they have already internationalized or approaching internationalization stage soon.

Yin also suggests using multiple sources of evidence, not only interviews. Other sources of evidence can be such as documentation, archival records,

observations and physical artifacts. In this case study, company Internet pages, company brochures and news archives were used to collect additional information besides the interviews.

6.3.1 Data collection

According to Yin (1994), interviews are one of the most important sources of case study information. The interview technique used in this study was open-ended by nature as they were asked for facts and opinions about the events. The people interviewed consisted of two CEOs (companies Alfa and Beta) and Vice President of Product Development (company Gamma).

The theme interviews were conducted as follows. The respondents were given the main topics before hand so that they could look for information that they have not had otherwise. This was important as was possible that the specific person had not been with the company throughout its whole history. Sending the topics beforehand also enhanced the fluency of the interviews. The interview consisted of two parts. The first part dealt with the founding of the company and the subsequent development (stages) it had gone through, including the possible growth periods in detail. The second part covered the companies' internationalization processes. The aim was to gather as much detailed information of the process as possible.

The interviews took place at each of the companies premises between the 9th and 21st of December 2004. The interviews lasted from 40 minutes to almost an hour and half.

6.3.2 Analysis of the data

Each of the interviews were transcribed and translated into English soon after the interview. Case descriptions were written according to the information gained in the interviews, and complemented with additional information from

company internet pages etc. The actual analysis was divided in two parts, one dealt with the life cycle and growth of the case companies and the other with the internationalization process.

6.4 Reliability and validity

To prove the reliability and validity of the research is one of most difficult issues in any study. Reliability in a qualitative research refers to how well the data have been taken into account, whether the data has been transcribed correctly and how well the results correspond with the researcher thoughts (Hirsjärvi & Hurme 2001, 186). The goal of reliability is to minimize errors and biases in the study (Yin 1994, 36). In a case study, an absolute reliability can never be reached as the actors (researchers, respondents and the phenomenon) change.

To reach as high reliability as possible in this study, several actions were taken. All the interviews were recorded and transcribed immediately afterwards. The reliability problems in this study involve the translation of the interviews. As the interviews were conducted in Finnish and then translated into English by the writers, occasional mistranslations or misinterpretations could have happened. To improve the reliability and the correctness of the translations, English versions of the interviews were given to the interviewees for review. The interviewees were also asked to check the case descriptions and quotations used in the case analysis to verify the correctness.

7 DESCRIPTION OF THE CASE COMPANIES

In this chapter, each of the case companies is introduced. General background information is given and the life cycle and the internationalization process of each company are outlined. The case companies are given fictional names for confidentiality. The alias names are used throughout the empirical section of this paper. The case descriptions are based on the interviews with the CEOs (Beta and Gamma) and Vice President of Product Development in the case of Alpha. Supporting and additional information is gathered from the company internet pages and news articles.

7.1 Alpha

Alpha supports the core processes of its customers with model-based software solutions. The company focuses on selected industries, currently it operates on four business areas. Company's net sales for 2003 were 39.8 million Euros and the company employs about 300 people.

The oldest of our case companies was founded in 1966, when the software industry was very new world wide and only just emerging in Finland. The company was in fact one of the first software companies in Finland. The founder of the company was an engineer who had previously worked in hardware sales in the information technology business. Two other engineers joined him in the company soon after establishment. One of the earliest management tasks was to obtain resources, since the companies did not even own computers at that time. Company's strategy was to survive and try to do business in Finnish markets. At first, Alpha operated in a technologically oriented way; less focus was on systematic sales and marketing. Slowly the organization's structure has changed along with increased systems and control.

The first software products were targeted at building and construction design, which is still the main industry sector. By 1980's Alpha had also expanded to

new industry sectors. Nowadays Alpha operates in four business areas, offering specific software applications for each customer domain. Alpha has a long and strong history in product development and innovation that has resulted in an extended range of software products. Increased number of customers, internationalization and added focus on sales, marketing and customer support has decreased the number of personnel in product development from some 50% to around 30% during the last decade.

The market situation has changed since the foundation of the company. Increasingly more construction and other companies have started using software in their work. It could be said that Alpha has developed simultaneously with the software industry, and has been able to become a market leader in the Finnish market (depends heavily on definition of market!).

Alpha's ownership has changed along the years of operations. The company was initially owned mostly by several of its customers, Finnish engineering offices. In 1980's one of Alpha's customers, also an engineering office, bought the majority of the company, reaching over 90% of the ownership in the beginning of 1990's. The ownership was diverged partly again before and partly during the public listing of Alpha in 2000. The company is now owned by private shareholders, the above mentioned engineering office with 50% of shares, some long-term investors, insurance companies, funds and company employees. Also the company founder still owns a considerable share of Alpha.

Internationalization became a current topic in the mid 1990s after almost 30 years of operations. By then Alpha had reached a market leader position with over 50% of market share in Finland in most of its operations. It had become obvious that growing market share in the home market would have been very challenging. As the company still desired to grow, it had very few growth options besides international expansion. The internationalization was initiated

with company's main software product which was offered to a narrow market segment.

The international expansion happened rapidly; Alpha opened its first foreign subsidiary in Sweden in 1995 and in 1999 subsidiaries in USA and Malaysia were opened. Before end of 2001 more offices were opened in UK, France, Germany, Norway, Japan, China and the United Arab Emirates. Only the last one does not have a subsidiary status. Alpha also had a majority-owned subsidiary in Brazil which was closed down in 2003 due to unsatisfactory sales.

The expansion process has been very proactive. The company knew, when starting internationalization, that there was a niche for the product existing in all countries. Being the first global player representing that particular niche, a market research was done and the best markets were selected for international expansion. Alpha has used the subsidiaries as mode of entry in the most important markets mainly because of a long term need for a local presence there. The foreign subsidiaries are occupied with local and some Finnish employees.

In addition to the subsidiary mode, Alpha has developed a wide partner network that nowadays consists of more than 30 partners. Through the partners, Alpha's products are available worldwide. Even though the partners might sell several products, Alpha's product is the main article. The partners take care of marketing, selling, deliveries, and training and support functions.

Internationalization and listing have changed the values between business operations. Only before listing in 2000 were separate sales and marketing departments established. These structural changes increased the number of people in management. The listing has also influenced on accounting, reporting and other financial issues, which has to be taken care more precisely now.

Since the establishment the growth of the company had been moderate, but mostly steady. At the end of 1980's Alpha had about 50 employees. At the time of initiating internationalization in 1995, the number of employees was around 100. The rapid international expansion provided strong growth; the growth rate was 40% to 50% annually for some years. Company has not tried to grow any faster than that to keep development and risks under control. During the last few years, Alpha has not actually grown anymore. Number of employees is now around 340.

Alpha now covers the desired markets abroad. It has no competitors of its size in Finland, and even abroad most competitors are small local companies. In the future it plans to make the most of the existing networks by adding some new products and selling them to the existing markets. The international turnover is 60-70% of the total turnover after the recent sale of one business unit and as future growth is expected to come from abroad, the share of international operations is expected to grow even higher.

7.2 Beta

Beta's business idea is to provide mediation, customer care and billing solutions for (telecommunication) network and service operators. In year 2003 Beta had net sales of 2.0 million euros. At the time of the interview, company had 29 employees. The company is headquartered in Jyväskylä with another office in the Helsinki region.

Beta was established in 1990 as a limited partnership company. Founder of the company was an entrepreneur with a strong technical background and plenty of innovation. During its first five years, company had 3 employees and it did accounting and production control applications for local companies. Company did all kinds of data systems and software applications. The operations in the beginning were run on survival basis and without any real strategic plans for the future. Opportunistic business method was used and customer demand was

satisfied. In 1995, the sudden interest of a telecom client changed the product orientation of Beta. This lucky coincidence determined Beta's future business area. Next change became in 2002, when Beta got a new CEO who saw the potential of the company and wanted to make Beta a profitable business.

In the beginning of the business, all the products were customized for each customer separately. Applications were not duplicable neither version compatible. The product, customer care and billing solution, was renewed and productized in 2002 to make it easier to sell for more customers. The best features of each customized product were collected and put together to create a master product, which became a new main product of a company. At the same time customer care processes (customer and technical support) for after sale were established. Company sells for the mobile operators who want to outsource their operations (e.g. billing system). Selling the whole data system is more difficult and time consuming than selling just licences.

Markets in Finland have been selling very well in 2003-2004, just about in the limits of company's resources. A strategic change was made in 2003, with a decision to aim at becoming the market leader with a superb product in the home market before any further internationalization efforts. Company has done market research, which investigated market size, its phase (regressing or growing market) and whether the market has high mobile penetration level. If the level was high, there was no market growth available anymore.

At the moment, company covers 70% of sales to virtual network operators (VNO) in Finland. Company's target market was first less demanding operators, before the strategy change was made to bring company into a level where it could serve bigger and demanding operators. This also meant selling product for much better price, getting more profits and providing better quality.

The ownership of Beta is held by the original founder (around 33%) and an investing company (33%), with the last third remaining in the hands of current CEO and several employees. The original founder was first appointed to Development Manager of the company, but later on it was seen better for the company and to its new strategy, that he was appointed to manage a small business unit of Beta on his own.

The first step to internationalization happened quite unintentionally. A Swedish telecom operator asked the company to deliver the same billing solution to them in Sweden as they had delivered to the Finnish operator. The international sales revenue grew soon as the Swedish company expanded to Norway and Denmark, and Beta delivered the system to these subsidiaries as well.

After the new CEO's arrival in 2002, the company made first strategic plans towards internationalization. The new CEO had been working for a major Finnish telecom operator in Finland, USA and the Netherlands before joining Beta and had, therefore, a broad international experience and understanding of the telecommunication sector (news article, the founder in 2002). New CEO wanted to make a strategy plan, which would tell exactly the future direction of business. In 2002, the first ever budget was made. The original founder did not have managerial knowledge and the company had not used any other managerial systems or control methods than eyeball control before that.

During 2004, Beta did market research on eight European countries. The target markets were limited to European markets and close geographic proximity because the company values close contacts with customers. Of these eight researched countries Beta has chosen four for its next international target markets.

As a part of the internationalization strategy, Beta has been partnering with big global players in the outsourcing business. These contacts work as a point of reference when dealing with prospective customers. When small company

makes deals with big ones, the small one does all the ground work; selling, making deals etc. Big partners do hosting, application management, and localisation. Both companies get their share of the ready deal. Close contacts with Finnish telecom operators has also proved to be valuable to the company; when a Finnish customer has expanded abroad, Beta has provided systems for the foreign subsidiaries as well.

In 1995, the number of employees was 5, and Beta has experienced most growth after that, between years 2001-2004, from 10 employees to 29. Number of employees is expected to grow up to 40-50 by 2006. Turnover of company was 1,5 M€ in 2003, 2,1 M€ in 2004 and planned turnover for 2006 is 4,5 M€.

Domestic as well as international markets are still growing and offer growth possibilities for Beta within the telecom industry. The approximated growth rate for the next years is 35% annually. Obstacle for the growth is the nature of the business; billing systems are not so easy to duplicate than e.g. pure software products. The decision to charge the client per each customer, not as a total set price, was a good move. When current customers grow, the growth is automatically added to Beta as well. Competitors are still few, some small domestic and local operators, but none with as strong product as Beta. Digitalizing information, communication, entertainment and business transactions seems to become broadens the business area. Operators are outsourcing their billing in increasing amount and Beta wants to be a leader in its chosen market segment. Beta chooses to operate purely in GSM/mobile phone business, because they are familiar with that business area.

7.3 Gamma

Gamma, a software product company develops, promotes and sells non-violent interactive SMS TV games and cross-media content management products for TV broadcasters and production houses. In November 2004 the company was acquired by larger company. Nowadays Gamma's SMS TV production

activities are a separately operating business unit within the company. Before being acquired, Gamma had grown to a company with 12 employees.

Gamma was founded in 2001 by an entrepreneur who had previous experience in establishing a company and thus general business knowledge. The business idea had lived for about a year in the background before the actual founding of the company. Company was owned and financed by the original founder along with few other employees joining soon after establishment. Also state subsidies were applied and received to secure start-up operations. Gamma was established around a promising business idea of offering content management system that would integrate and manage applications made with different technologies.

There was really no real business strategy in the beginning, the emphasis was put on developing the product and finding out whether anyone would be interested in it. The first actual sale was made in 2002. The product line now consists of several products, mainly various SMS TV-games. Innovation has been valued highly within this company even though now products are partially outsourced and not all developed in the house.

Value-adding services using mobile phone, Internet and TV are rapidly growing business area globally, especially in Europe and present huge market opportunities. The home market in Finland is the most advanced and has actually reached a mass market stage. Due to that, in addition to the fact that the Finnish market is small and limited, it does not offer any growth opportunities for Gamma as it has been able to sign contracts with most TV-broadcasters.

From the beginning the company has aimed at growing internationally as it was known that the home market would not provide sufficient growth. There was no systematic look for international customers at first because the company had decided to secure some sales domestically before looking abroad. The first

international contacts were somewhat accidental, results from attending different tradeshows. In 2003 there was one international TV-channel as a customer.

After the appointment of the new CEO in the beginning of 2004, the company was able to secure financing that made it possible for Gamma to approach international markets more systematically. Gamma first focused its international operations to European markets, the aim was to obtain four channels as new customers within Europe. Germany has been an important market; Gamma's products are used at three different TV channels. Sales to Switzerland and Austria are also just starting. These countries were where the demand was estimated to be highest. In 2004

There has been demand for Gamma's products in Asia even though the company has not really targeted there. Business in Hong Kong is just starting, as well as in Vietnam and China. The company operates from Finland, meaning that the product(s) is delivered from Finland. As local presence in other countries is not necessarily needed, the company has decided not to open offices in the countries they are exporting to. This way they can keep a relatively low profile and even more important, the costs and risks are kept as low as possible.

As it is always difficult to leave from the home market, Gamma makes business mostly through local partners in the target markets. The potential partners looked after mainly in different tradeshows. Then these partners find the end users in their own markets. The value chain changes a little if compared to that in Finland where products are sold directly to the end users. The partners are about the same size as Gamma as the company has chosen not to compete for the attention of bigger companies with thousands of products in their portfolios.

Gamma has targeted international operations into markets where demand is estimated to be highest. These estimations are based on the cellular phone penetration level. If the penetration is high, it can be forecasted that these value adding services that are provided with the help of Gamma's products, can be successful. World widely this business environment is still very new and emerging. If considered for example USA, the market there is not mature enough for value-adding mobile phone services. The company has less than twenty competitors worldwide, but new entries to the market are expected, especially from Asia. Gamma has prepared for the entrance of competitors by planning a change in strategy by reforming itself from a software development house to a distributor.

The strongest growth occurred during the year 2004. The company grew from few employees to a dozen and also doubled the sales compared to the previous year. The original founder works still within the company in a managerial position and owns part of the company together with the current CEO and other employees.

The aim for the future is to get more sales, especially internationally. The company is hoping to expand more within Europe. In addition to becoming international in the beginning, one of the original goals of establishing this company was that it will be sold one day. Although perhaps not planned to happen so soon after establishment, in the end of 2004, the company was acquired by another company with the same customer domain thus ending the Gamma's individual life cycle.

7.4 Summary of case companies

The main facts of the three case companies are gathered together in the following TABLE 6.

TABLE 6 Key facts of the case companies.

	Alpha	Beta	Gamma
Year of Foundation	1966	1990	2001
Number of Employees in 2004	300	29	12
Field of Business	Software product business	Software product business	Software product business
Products	Model-based software products	Mediation, customer care and billing solutions	Interactive TV games and cross-media content management products

Areas and Countries of Operation	Global	Scandinavia	Europe, Asia

8 CASE COMPANY ANALYSIS –LIFE CYCLE AND INTERNATIONALIZATION PROCESS

This chapter analyses the case companies in the light of company life cycle, growth and internationalization processes reviewed in chapters 3-5. Several aspects of the life cycle and internationalization process have been chosen for closer analysis in order to find answers to the research questions.

8.1 Life cycle analysis

Several different generic and high-technology-oriented company life cycle theories were introduced in chapter three. Development of the case companies is analyzed in contrast to the life cycle studies and models introduced earlier in this thesis. In the analysis, the case companies are reflected to existing life cycle models, their stages and characteristics to detect similarities between them and also within the case companies.

Although all of the introduced models are valid for company development, not all of them are applied to analysis of this study. Greiner's (1972) evolution and revolution theory is still applicable nowadays. In this model, which is developed for bigger organizations, the company goes through five linear stages in sequential order. Churchill and Lewis' model (1983) is developed for small business, and it offers variation in the order of stages. As Scott and Bruce's (1987) life cycle model for small businesses is based on both Greiner's (1972) and Churchill and Lewis' (1983) work, it is used in analysis of the case companies along with the original models.

From the reviewed models suitable for high-technology companies, McHugh's (1999) and Kazanjian's (1988) models are both used in the following life cycle analysis. Some parts of Galbraith's (1982) model are applied to analysis, even though the model mainly concentrates on high-technology ventures who manufacture tangible products. Nambisan's innovation-orientation centric

model is not used because the model uses only two dimensions (the nature of the software product and the range of NPD (new product development) tasks carried out by the firm). "*The two dimensions together enable us to map firm evolution directly in terms of the nature and process of innovation without consideration of the changes in size, age, or other structural and contextual factors* (Nambisan 2002, 147)." Nambisan's primary objective has been in highlighting the value of the innovation-orientation perspective in company development and not in providing a comprehensive theory of firm growth (Nambisan 2002, 159).

Several key dimensions are used in this analysis attempting to find out similarities within the case companies and reviewed theories. The dimensions suitable for the purposes of this study were selectively collected from the life cycle model theories presented in chapter 3. The dimensions used in analysis are: age and size, stage of software industry and market situation, organization structure and its formality, growth rate, product-market and product line, management style and owner-manager's presence, major source of finance and ownership, business strategy and competitors.

8.1.1 Age and size of the companies

Typical key dimensions in most of the life cycle models are the age and size of the company. The age of the companies is said to be young, older, any age etc. but only Miller & Friesen (1984) give some exact years of companies in each life cycle stage. The size of a company is often defined to be the net sales, turnover or number of employees. The most suitable size definition is given by Scott & Bruce (1987), as they state that size is a combination of all of the above added with some growth-driving factors.

Alpha is the oldest of the case companies, 38 years. For a software company it is quite awesome age. Beta is 14 years old and still quite young company, when

considering the strategic changes it made when it was 5 years old. Gamma is the youngest of the case companies, only 3 years old. One can ask whether age is a good criterion for measuring company's life cycle in software business. According to Miller & Friesen (1984), Gamma is still in Birth phase as it is younger than 10 years. However, Gamma's behaviour and success prove that it is already way past that phase.

Alpha had one founder and two other partners joined him shortly after foundation in 1966. Number of employees grew steadily, being 50 at the end of 1980's, 100 employees in 1995, and 300 in 2004. Beta also had one founder, who was shortly accompanied by two partners. In 1995, company employed 5 people, in 2001 the number had doubled to 10 and in 2004 they had 29 employees. Gamma had also only a few people in the beginning and the number of employees grew only in 2004, from 4 people to 12. Measured in number of employees, all of the case companies are classified to small- or medium-sized companies. Only Alpha causes a bit of problematic thinking whether it is a medium or a large company. Measuring software business companies' size with number of employees gives often picture that almost all companies are small-or medium-sized. As Ohjelmistoyrityskartoitus 2004 says, 25 % of Finnish software product companies employee less than five people.

8.1.2 Stage of software industry and market situation

The speed of the company development and growth is often related to the market environment and stage of the industry (see Viitala & Jylhä, 2004; Greiner, 1972). Companies operating in fast-growing industries have shorter periods of slow growth than companies in mature or slowly growing industries. Although software business is very young industry, it has grown faster than many other industries ever have or will. Software industry in the 1990s could be characterized as a rise and fall of many companies. The fast pace of the industry has influenced also to the development of the case companies.

In Alpha's case, software industry was very much new and actually only emerging in Finland in 1966. Alpha has experienced just about all the possible phases of software business. In the beginning of Alpha's business life (late 1960s) the market situation was unsure for Alpha; the industry was new and unknown and computers were not widely used. Still the founders believed in software business and established a company. As the benefits of software were really understood, the market started to grow. By 1995 Alpha had reached the market leader position in Finland and had begun internationalizing to new markets and stepped into the second growth phase. Nowadays the global market situation looks still good, because Alpha has a good product in its niche markets and it is able to get reoccurring business with new versions of its software.

Software industry was beginning to grow enormously when Beta was established. Beta began its operations by delivering customized administrative solutions to local customers. The company did not really have a target market and it operated on a survival mentality. The industry downturn at the end of 1990s did not affect on Beta, because at the time they were operating mainly very locally and in that sense had a firm business. In 1995 Beta started the business it has been in since; as a result of an inquiry the company build its first billing solution. Strategy change took place in 2003, when Beta started targeting its delivery to first class operators instead of second class. Beta changed its target market in 1995, and again in 2003. It really had no real target market until 1995, when it started to target to telecommunication business. After the arrival of new CEO, the market situation changed in 2003 because of the productization, as the company started serving more demanding, first class operators.

Gamma was actually established after the regression and shakeout of software industry. The success of the company proves that a company with a good product can survive well in the industry even though the industry growth is

not rapid at the time of establishment. Gamma was one of the early entrants in the field of delivering value-adding mobile service-solutions. Therefore Gamma was able to get easily all the potential customers (TV-channels and broadcasters) to buy its products and the company experienced the first growth already right after establishment. However, as the Finnish market is very limited it soon reached a mass market phase meaning that Gamma covered the market almost within a year. Gamma's market situation was good in Finland, until the markets run out. The global markets look promising because worldwide the market is still in the emerging stage.

According to the last stage (Strategic Maneuvering) of Galbraith's (1982) model, after establishing the market leadership, company can use international expansion as a form of growth. This fits to two case companies, Alpha and Gamma. The growth was achieved through international markets, because the domestic markets were saturated.

8.1.3 Organization structure and its formality

The organization structure is often considered as one of the key factors in existing life cycle models. However, the models are often generic life cycle models, which do not take into consideration young industries (e.g. software business) and quickly developing companies within them. Also the different mentality of software business companies confuses this equation. The software company can be quite unstructured and informal, but still a mature, viable business.

Alpha has steadily developed its organization structure. The major changes in organization structure took place around the undertaking an IPO in 2000, when marketing, sales, accounting and managerial tasks were formalized. The number of personnel in product development has decreased from earlier years' of 50% to around 30% during the last decade. This shows the structure change

and move from development to other functions (e.g. sales, marketing, financing) important to more mature company.

Beta was very informal until 2002, because the number of employees was low (around 10), and the company did not have any ambitious business plans, but operated more or less on a survival basis. Even nowadays, with proper management and strategies, the company can hardly be described as a bureaucratic company. Some structured organization forms as sales, marketing and financing are now found within the company.

Gamma has always been well structured, because of the experienced and business-conscious founder. Also this is due to the small number of employees. With so few employees, Gamma could not even be very bureaucratic and formal. The most of the changes in organization structure happened in 2004 along with the new CEO, when actual strategies and new plans were implemented.

Organization structures of the case companies can be described as simple (Gamma), somewhat departmentalized and functional (Beta), and more departmentalized, also divisional, and functional (Alpha). According to that, two case companies (Gamma and Beta) are classified between the stages of Expansion and Maturity and one (Alpha) between the Maturity and Diversification stages.

8.1.4 Growth rate

The company life cycle and development models reviewed in chapter 3 give often the picture that the company starts off slowly, grows gradually and then experiences high growth before maturing and declining. But empirical studies show that growth (slow or high) may occur at any point of company's life. Although company's unwillingness for growth has been introduced previously (see chapter 5) in this thesis, none of the case companies really experienced it.

Only Beta was not actively looking for growth before the strategy change in 2002. All of the companies wanted to grow, although the speed and method varied. It has to be remembered that the high growth rate is typical in the high-growth industries like software business.

Alpha has had very moderate growth through its life and has mainly grown organically. It started in Finland by targeting (domestic) vertical market segments with its products and thus experiencing the first growth phase within the domestic market. The most growth happened in years 1997 to 2001 when the growth rate was between 40% to 50% annually due the internationalization and help of high-growth phase in the software industry. Now for the past few years the growth has been almost nonexistent and even declined in 2004 due to sold business units. Beta has experienced rapid growth between 2002 and 2004, this is mainly result of new strategy and company's systematic development towards a profitable business. The plan for the future growth is 35% annually and as the trend of growing number of outsourcing telecom operators (Beta's customers) and good future predictions in telecom industry show, the planned growth is realistic. Gamma started growing slowly, but then experienced very rapid growth in 2004, only three years after establishment. The growth will probably continue as the markets look promising. This growth development could be explained by McHugh's software growth model (1999). Before the strategic change in 2002, Beta had fallen to the Steady State zone. The new CEO was ready to go through the filters and the company moved forward to the Early Growth state. In 2004, company's business model and export strategy were ready and company passed these filters and entered the High Growth zone. McHugh's (1999) theory can also be applied to Alpha and its systematic growth efforts. Interesting observation is that the high growth phase could happen more than just once (as explained in reviewed life cycle models). For example Alpha experienced high growth after internationalization in 1995, but now the growth has slowed down, even decreased in the last few years.

Depending on the international expansion, the high growth can be achieved again in the future. Even though, it has to be admitted, that the highest growth is still ahead for all of the case companies.

8.1.5 Product market and product line

Innovation and product development in software business is usually started well before the real establishment of the company. Only Kazanjian (1988) takes this into account in his model (Conception & Development stage). Broad product line is often typical for software business. Although there are companies who have developed one major product and customize it if necessary for each customer.

Alpha has extended range of products that are technical specialties for specific industries. The product strategy focuses on the vertical market segments. However, in 1995 only one main product was first used for internationalization. Alpha uses partners and subsidiaries as their market channels. In the beginning, Alpha developed a technology for a small niche market. This technology was later on widely spread to other industries and markets as well. This has been very beneficial for Alpha, who has widened its target markets as well as gained broad customer base without really changing its product. Nowadays Alpha is developing towards the extended product range, increased markets and channels, which is commonly characterized for Expansion Stage company.

McHugh (1999) says that new product concept may prompt the business to completely change its direction. This is something that happened to Beta in 1995. The target market was changed into telecommunications. Beta developed customized products according to customer requirements until 2002. After that several versions of the product was brought together to productize a single mass product so that the same product could be used for all the customers with only some modification. This master product fulfilled all previously introduced

McHugh's (1999) five characteristics for a strong software product. Especially the fact stay rooted in familiar territory is true. Beta noticed that they can deliver very good customer care and billing solution for telecom operators and they did not change that strategy. The new master product has been successful and will also be compatible for a long time. Beta uses networking and partners as their market channel, partners are used as reference, but product is sold directly to the customer. Gamma has always had several products in its product line. The products were first developed within the company, but now some of development is outsourced. It could be said that they have an increasing product line, and they use single market channel (partners) in the international markets.

8.1.6 Management style and owner-manager's presence

Software business companies are often criticized because of their technical-oriented founders and their lack of business skills. Two out of three case companies experienced similar situation. Only Gamma's founder was aware of business and management. Founder's role changes remarkably as the company grows. First the founder is the actual company, but later on his skills may become inadequate and he has to hire a professional manager. This is only if the founder understands the situation and wants that the company continues its growth. The point when original founder starts delegating power to others is often presented in life cycle models at some stage. Among other researchers, McHugh (1999) emphasizes the importance of CEO and the difference between start-up and growth phases' management.

The founder of Alpha decided to sell his share of the company at some point. Recently he has been buying some of his shares back from the company. One of the original founders still works within the company in managerial position. Two of the case companies changed their CEO, and both changes turned out to be very good. Only the reasons for the change of CEO were totally different.

Gamma's new CEO was a strategic investor, who wanted to invest on the company. Beta's new CEO had plenty of previous software and international experience with big companies. He wanted to work in a small potential company where he could see the impact of his decisions. Change of CEO changed the management of Beta completely. Company's first budget was made only in 2002, which describes the situation well. The management changed from individualistic ad hoc style to administrative and professional. Former CEO was appointed to Development Manager, but soon after that, it was evitable that the old business culture would remain in the company as long as the original founder was present. He was moved to manage a small subsidiary of Beta where his skills were more usable. Gamma's new CEO solved the financial situation of the company. New strategic plans were made and more employees hired. The original founder works still within the company in managerial position, and satisfied with the current CEO and his work.

The change in leadership in two case companies was significant. Beta and Gamma experienced dramatic change when new CEO replaced the original founder(s) of the companies. It was entrepreneur's time to step down, and give room for the professional manager. As McHugh (1999) states in his theory, the company's start-up management and growth management are different businesses, because other **is** business. This is exactly the case with Beta and Gamma. In the beginning, the management style in all of the case companies was entrepreneurial and individualistic. Now all of the companies experience professional and administrative management. That would locate the companies into Expansion Stage, according to Scott and Bruce's (1987) model.

8.1.7 Major source of finance and ownership

The most of the Finnish software companies are relatively small. Therefore the ownership of these companies is often held by the founders of the companies

and their family members, with only minor external ownership (see Ohjelmistoyrityskartoitus 2004). According to the reviewed life cycle models (e.g. Churchill & Lewis), funding comes from the owner, his friends and relatives at the early stages of companies life cycles (first two stages e.g. Start-Up or Existence and Expansion or Survival). Governmental subsidies for especially small companies are typical in Finland, and this funding possibility was not mentioned in the any of the reviewed models. The number of public sector agencies and associations in Finland provide funding and knowledge for a starting company.

Alpha was first owned by its founders, later on by some engineering companies. During the years 1980-1990 the majority of Alpha was owned by a building engineering company. Before and after listing in 2000 the ownership relations changed. Owner group is formed by private shareholders, the above mentioned engineering office with 50% of shares, some long-term investors, insurance companies, funds and company employees as well as the original founder. In the beginning Beta was owned by the founder with his family as well as some investors. Beta has also used public sector agencies' funding and loans in financing its business. Nowadays the company is owned by the original founder together with investing company, current CEO and some employees. Gamma was self-financed from the beginning. Gamma has also financed the development and commercialization of the business with the help of public sector agencies and associations. Strategic investor joined Gamma in 2004 and improved the financial situation of the company.

8.1.8 Business strategy

Alpha operated in the emerging software market at its early stages. Later on, the business operations grew very successful and Alpha became a market leader in Finnish markets. In the beginning the main products of the company were software applications for building industry but the portfolio soon

expanded to cover other industries too. In 1995, Alpha decided to head for new markets and started its internationalizing process. The internationalization became soon very profitable and new subsidiaries abroad have been established ever since. Company's strategy changed in 2000 when it undertook an IPO. Due to the many duties of a public company, company was restructured and new more formal organization structure was enforced.

Beta did not really have any other strategy than survival in the beginning. Until 2002, the company was a lifestyle business, neither ambitious nor seeking for the growth. After year 2002, the goal was to become a profitable business. The change in strategy was remarkable and very profitable. Business strategy was developed, along with other strategic decisions. Operations turned into more business-like e.g. making the budget and productization.

Gamma's business strategy was at first just to survive and see how things will go. The strategy behind establishing the company at first place involved internationalization and selling the business when there would be a good opportunity for that. Recently the company was actually acquired by a bigger player and now Gamma continues its operations as an individual business unit within that company. Some of the life cycle models include selling the business or acquisitions. For example Churchill and Lewis (1983) suggest that the owner has a possibility to sell his business at a profit in Success or Take-Off stage, which fits well to Gamma's situation.

8.1.9 Competitors

Alpha hasn't had many competitors throughout its existence any competitors during its early years. Even after the development of software business, it has no competitors of its size class. International competitors are also small local companies. Beta has some small local operators as competitors, but none with

as strong product as Beta. Gamma has about 10 competitors worldwide, but new entries are expected, because the market is new and emerging.

A new unknown company needs a reference point or founder's previous experience in the market. The market entry and getting customers becomes easier that way. As McHugh (1999) says, the lack of reference can create credibility problems and bring the company's growth process to a halt. Actually all three case companies used references or previous experience in their actions. Alpha was founded by an engineer who had previously worked in a big high-technology company (hardware manufacturer) and therefore could use previous networks and experience from that field. The founder of Gamma had also previous experience from software business start-ups and did not have great problems in company's first years. Both Gamma and Beta hired later on a new CEO, who had great deal of experience from other software companies, had good networks, contacts with suitable reference companies and also international experience. Having references and experience is important between Version 1 and Roll-out zone in McHugh's model (1999). Only Alpha and somewhat Gamma fit into these stages. Beta came into this point later in its life cycle.

8.1.10 Life cycles summarized

All three case companies had very different life cycles. Many similarities to existing models and to some of their stages were found within the case companies. None of the models were applicable as such. Whereas the key dimensions would be similar to case companies, the stage was wrong or the other stages of that model were not suitable. Some stages could be found among all of the case companies' lives. Growth in some form (slow, steady or fast) was common to all three case companies.

Greiner (1972) model's stages are more suitable for bigger organizations than for small software product companies. However, the first phase with its problems and solutions: *Creativity & leadership crisis*, followed by *Growth through direction* can be seen in Beta's and Gamma's lives. The creation of the company as well as the product, fulfil the company founder's mind, leaving management and leadership neglected. Strong leadership and change of management is needed to set the company back on track. Greiner believed that company's history determines its future; this was also the case with Beta and Gamma. Questions "where have we been, where we are now and where are we going", where asked.

Phases of Alpha's life can be seen in Scott and Bruce's (1987) model, especially when slight modifications are made. Gamma did go through *Inception, Survival, Growth and Expansion Stages.* Some of the key dimensions (see TABLE 2 in p. 43) match quite well to the stages of the model. Stage of industry stayed emerging for a longer period, until the higher growth followed by *Growth Stage*. Gamma was product- and development-centred for a longer time, not only till *Survival Stage*. Also the organization structure changed into functional and decentralized later than in *Growth Stage*. Gamma also created better profits sooner than the model suggests.

Strategic Maneuvering stage of Galbraith's model (1982) in the form of international expansion was seen in Alpha's and Gamma's behaviour. Other than that, Galbraith's model (1982) is not suitable for such a small software product companies than the case companies.

Kazanjian (1988) introduces *Conception & Development* stage in his model. The company is not yet established, but the idea and the product exist. None of the interviewed people were the actual founders of the company, so the existence of this stage cannot be shown. *Commercialization* stage of Kazanjian's model (1988) is likely to happen to all software product companies as it did also to the case

companies. *Growth* and *Stability* stages are suitable for bigger companies than the case companies in this study.

The growth of all three case companies can be explained with McHugh's model (1999). The growth can be sudden, as the markets increase, the strategic change can give a good push to the growth, or the growth can be steady and have several high growth points. New product concept made Beta change its direction completely, a matter also agreed by McHugh (1999). Beta changed its product strategy to create a stronger master product to serve new target customer group. Also the importance of CEO is emphasized by McHugh (1999). Two of the case companies (Beta and Gamma) experienced dramatic, but positive changes after changing their CEO from the founder of the company to a new professional CEO. According to McHugh (1999), the start-up management and growth management need definitely different managers.

Many general life cycle models use age and size as key dimensions for the model. It was noticed within the case companies that neither the age nor the size of the company, could not determine the life cycle stage which the company was going through. Common to all of the case companies at some point of their lives, was the eagerness or need to internationalize.

8.2 Internationalization process

The internationalization history of each case company was described in the previous chapter. The case study analysis is conducted by focusing on the following factors: the timing of internationalization in respect to the company life cycle, the speed and mode of internationalization, the reasons for international expansion, the meaning of psychic distance and the importance of networks. The internationalization processes of the case companies are evaluated against the internationalization theories and previous studies of software company internationalization presented in this paper. The analysis is done to see if the internationalization process of the case companies goes

according to any of the existing theories and if the case companies' internationalization processes share any common characteristics that could be generalized to cover other Finnish software companies too.

8.2.1 Speed and mode of internationalization

According to the Uppsala model of internationalization companies internationalize only after developing in the domestic market and that internationalization is the consequence of series of incremental decisions. Companies are also expected to gradually increase commitment within a specific country (in terms of resources allocated and the establishment chain) and across countries. Of the case companies, Alpha has the most domestic history before internationalization. The company had been operating for about 30 years before international expansion became a current topic. The company was still relatively small at that time (with about 50-100 employees). The company, however, did not proceed gradually in its internationalization as the Uppsala model would suggest. Alpha experienced a rapid growth and internationalization period once the decision to target markets outside Finland was made.

Alpha has used mainly two strategies throughout its internationalization process. It has established subsidiaries to its most important markets, which, according to the Uppsala model, is considered to require large resource commitments and to happen later in the establishment chain. In addition, Alpha has a wide partner network worldwide to cover the markets in which it does not have a presence itself with an office. A similar pattern to that of Alpha's, in relation to subsequent international development, was also found in Bell's study (1995) where the responses indicated that software companies were generally not inclined to change from their preferred entry mode as they developed new export markets. Thus, the approach to a given market remained

constant, even when the company had been operating there for a considerable length of time.

The subsidiary mode was selected for the most important markets because Alpha feels that to truly understand a market and customers there, a local presence is a necessity. Johansson and Vahlne have noted on three exceptions to the Uppsala model of which one is that when a company has considerable experience from markets with similar conditions and the market conditions are stable and homogenous, it may be able to generalize the experience to any specific market. This exception seems to apply particularly well in the case of Alpha, as it also came apparent during the interview:

> *"It was known that the building sector was existent in every country… The line of business is well defined and the procedure is similar every where, only some national standards can vary. but the use of software is the same."*

In contrast to the Uppsala view's long domestic history prior to internationalization, the Born Global companies, by definition, are expected to internationalize at very early stage of their lifecycles (Oviatt & McDougall 1994, Knight & Cavusgil, 1996). Arenius (2002) claims that these (software) companies must internationalize instantly to capitalize on their knowledge advantage; they must move quickly into international markets because the results depend on getting to the market before the knowledge is copied by competition. Gamma can truly be identified as a born global company and its approach to internationalization has been quite different than that of Alpha's. It knew from the beginning that in order to grow or even to survive it would need to internationalize quite early. Within two years of foundation, the company had its first foreign TV channel using its products and after the appointment of the current CEO (in the beginning of 2004) the company was able to secure six more foreign TV channels within short time period as its customers. The CEO's previous experience with international software business has helped this

process considerably, the fact that is often noted to be an important driving force in the emergence of born globals (i.e. Rialp-Criado et al 2002, 16).

Gamma chose to penetrate international markets with help of local partners in the chosen target markets. According to the CEO of the company, this was mainly because the business domain sets the partner strategy; the products are sold through local TV-broadcasters to end-users. Another reason for choosing partner strategy for internationalization was that the company wanted to keep the risks and costs of it as low as possible. This is consistent with Oviatt and McDougall (1994) who posit that because many new companies going international lack sufficient resources to control many assets through ownership, they need to rely on alternative means of control. A network structure, i.e. using partners, has been one of the most powerful resource-conserving alternatives in internationalization according to them.

The pace at which a company enters new markets can be strongly affected by how fast it is able to locate suitable partners (resellers, distributors). The search for international partners is generally characterized by greater uncertainty and risk than the search for domestic partners (Arenius 2002, 159). Also the CEO of Gamma acknowledged this as the following comment illustrates:

> *"Finding partners takes time unless you have existing networks, which new companies seldom have. --- You start where it is easiest, the home market, hoping then to find partners when running around the world in different events… The first real contacts are often quite accidental."*

In contrast to the two other case companies that were proactive in their internationalization process, Beta Systems has been fairly cautious and reactive with its international expansion. Its internationalization was actually the slowest in terms the speed of entering new markets. The original founder had mostly a technical background and only limited competencies in non-technical areas and no business education which may have hindered company's foreign

market expansion in the beginning. The company operated domestically the first years and the first step to internationalization happened quite unintentionally in a form of unsolicited order from Sweden. The founder was self-confident enough and reacted to an offered opportunity.

Beta was able to expand internationally after the first international sale by following the customer company's international expansion. This in line with McHugh (1999) who has noted that a way of addressing many issues associated with entering new foreign markets is to partner with a customer. This gives the company a reference site and more credibility. However, Beta had some unfortunate experiences in Latvia and Lithuania, and mainly resulting from that the internationalization process slowed down or actually stopped completely after these first foreign sales.

With the appointment of new CEO in 2002, the company made some strategic changes. It was decided that the company would emphasize the domestic market for a while as it seemed to present fairly good growth opportunities. The time was used to improve the product and to gain market leadership position in the home market. By reaching market leadership position, the company was also hoping to improve its reputation, which would in turn help its new internationalization strategy. Beta's initial internationalization efforts can not really be well explained with any of the presented model. Perhaps best explained in terms of the McHugh's framework, Beta started internationalization from the opportunistic stage only to fall back into parochial –stage.

The speed of internationalization can also be defined in terms of how rapidly a company penetrates new international markets. Having a pattern similar to the case companies in the study of Coviello and Munro (1995), also Alpha was able to internationalize quickly after the principal decision to pursue growth through internationalization thus contradicting the Uppsala view. Alpha

established eight subsidiaries in five years and at the same time was able to develop a wide partner network through which it has entered many more markets. Also Gamma has been able to enter quite many markets within a relatively short period of time; the company is not yet four old and its products are used in multiple foreign markets. Thus is can be said that Gamma's internationalization does have many of the characteristics of typical Born Global behavior. Beta, on the other hand, is yet to experience possible rapid internationalization.

Also a narrow market niche favors international geographic diversification because the market potential in any single country may be too small to sustain growth (Arenius 2002, 158). Thus it may be necessary for a company to go to multiple markets. At the same time, also knowledge can be a major source of international competitive advantage. In these circumstances, the pace of internationalization is likely to be rapid as companies seek to exploit narrow windows and gain first mover advantages. Conversely, lower knowledge intensity of products, processes, sectors or markets is likely to lead to more gradual internationalization (Bell et al 2003, 351).

This was especially evident in the case of Alpha and Gamma. Alpha internationalized with its main product which is targeted to fairly narrow market but one that is existent in every country. Thus the company established sales offices rapidly in different markets. It started its internationalization in one European market, close to the home market. It aimed at rapid penetration into other countries and established subsidiaries in eight other countries within the next five years. With this rapid internationalization Alpha has been able to gain a global market leadership position.

The market niche Gamma targets its product is quite small and in Finland the market has already reached mass market stage. Even though in general the market is at early stage, the company has already exhausted the Finnish market

(it has agreements with most of the possible partners) and the domestic market will not sustain growth any longer. Therefore, Gamma is looking to several foreign countries in which the markets are only starting now and it is hoping to get the early player advantage in those markets.

8.2.2 The meaning of networks

In seeking information and opportunities for internationalization, a natural solution for any company is to turn to partners with which it has relationships. For example, the case companies in Arenius's study relied on their networks to identify potential partners and to negotiate cooperative agreements thus speeding up the internationalization process. As Arenius says, having joint suppliers and customers, and industry associations, or being related through employees' professional connections, is sometimes beneficial for partner identification and access (Arenius 2002, 159).

The same situation occurred with Beta. The present CEO, who came to the company in 2002, had strong personal network connections within the industry. The company was able to use his connections to win over the biggest Finnish operator as its customer. An internal reference within this customer company also helped Beta to sell to company's other units located outside Finland. As the founder of the company stated:

> "*The new CEO had been working for a major telecom operator in Finland, USA and the Netherlands before joining the company and had, therefore, a broad international experience and understanding of the telecommunication sector.*" (Source: News release of company Beta)

The company was able to further benefit from networks by negotiating agreements with global players in the outsourcing business. These agreements, as a point of reference, give the needed credibility to the company when making deals with new customers. There is also evidence from other studies

supporting the importance of networks. I.e. Coviello and Munro (1995) found that the (rapid) and successful internationalization of their case companies appeared to have resulted from the company's participation in international networks with major partners providing the initial trigger for foreign market selection.

High-technology industries are often characterized by relationships between various organizations for product development and marketing (Coviello & Munro 1997, 365). Alpha has the longest history so it has a domestic network which it also values highly. Being firmly established company in Finland before internationalization, it has been able to create many beneficial relations with other actors in the industry. The company has been developing new concepts, products and technologies together with universities, domestic customers and the national agency of technology. This is consistent with Smilor and Gill's (1986) definition of domestic business network. The international network has been equally important to Alpha. With the help of the network Alpha has been able expand its international operations making its products available worldwide:

> *"Our domestic network is strong but it is especially important to have international partners. …without partners we would not have been able to everywhere we wanted."*

McDougall and Oviatt (2003) pointed out that network is a powerful tool especially for small company: companies can use their networks, for example, to gain access to resources, to improve strategic positions, to control transaction costs, and to learn new skills. In the case of Gamma, the current CEOs personal networks in Finland helped the company to secure financing and to recruit new people to help with the internationalization plans. But even more so, the company agreed to be acquired by another Finnish company in late 2004 in order to gain access to this other company's existing network:

> *"This is why the acquisition with XXX happened, they already have the existing customers in same domain. We took the short cut and saved some money when we do not have to look for customers now."*

Contradicting the importance of networks or partnerships, McHugh says that *"strategic partners often play a role in the business model but are rarely used as an entry mechanism to a specific country... partnerships can be useful for providing breadth of country coverage but rarely any real depth upon which to sustain a healthy country operations in its own right."* (McHugh 1999, 163).

8.2.3 Reasons for internationalization

The very basic reason for international expansion stated by both Alpha and Gamma was the limited growth opportunities in Finland and the desire for further growth. It is clear that internationalization plays an important part in the software companies' life cycle and frequently is the major mode of growth for companies that are targeting niche products to small markets. The slower pace of internationalization in the case of Beta partly confirms this statement: the further internationalization plans were put aside for a while when the company realized that the home market provided sufficient growth opportunities. Also the CEO of the company confirmed this:

> *"In 2003 we were aiming to increase international sales but soon realized that the home market was selling so good that there was no need to go abroad."*

In his study of Finnish, Irish and Norwegian computer software companies Bell (1995) emphasized domestic client followership as an influence on initial internationalization and market selection decisions. These reasons were also strongly evident with Beta in that the company has followed both its domestic and foreign customers to new markets. One of the initial decisions to go international was in fact a reaction to an offered opportunity to follow an

existing customer's international expansion to foreign countries. In general, companies emphasized the importance of being close to the customer or partners as a reason to go to new markets. However, the main reasons for foreign expansion besides growth ambition in the cases of Alpha and Gamma, and also for Beta in the later stages of its internationalization were market potential, industry trends and location factors.

For all the case companies, the primary influence on market selection was market potential, estimations based on market research, not the easiness of market entrance or low psychic or geographic distance to the market. Especially in the case of Alpha, the company placed most emphasis on market opportunities and appeared to know from early on which markets had the best potential for their product.

8.2.4 The psychic distance

Contradictory to Uppsala model and as evident also in Bell's study (1995), the case companies were not reluctant to start internationalizing in psychologically or geographically distant markets. In her doctoral dissertation, Arenius (2002) offered an explanation for this insignificance of the psychic distance by suggesting that it may be characteristic for the software business. According to her, the economics of software production are dominated by the fixed costs of development, and the marginal costs of reproduction are very low or negligible. Once developed, software products can be sold to large markets with little or no customization for specific user or marker segments (Arenius 2002, 164).

The Uppsala model assumes that as the psychic distance between markets increases the more difficult it becomes for a company to collect and interpret information properly thus making internationalization more risky. Therefore, companies should start internationalization in nearby countries. This argument is both supported and criticized by researchers as evident in the discussion of

Uppsala model in chapter 4. Within the case companies, the psychic distance has had varying importance, depending on which was the target market or country. I.e. Alpha mainly targets construction field, which is very similar in all the countries and it feels that the cultural and business differences are not of such significance that they would prevent the company from trying to succeed in any given market. But it has also been acknowledged that differences between countries can cause problems, as the company's experience in Brazil has proved. Alpha had a subsidiary there as well for a period of time but had to close it down:

> *"This was definitely a cultural misunderstanding because we did not manage to find a local person who would have understood the logic of Western business. It is critical for the operations of that subsidiary that a right person runs it."*

The company has issued the possible similar problems by having local employees working together with Finnish employees in their foreign subsidiaries. Regardless of the unsuccessful experience in Brazil, the psychic distance has not prevented the company from establishing subsidiaries in countries which are generally regarded as being psychically distant countries, such as Japan, Malaysia and Arab Emirates.

Gamma also targeted countries where it estimated the demand to be the highest, the possible psychic distance has not been a determining factor when choosing target markets. But in addition to the market demand, finding suitable partners within the market determine whether the company targets the market in the end. As the CEO put it:

> *"It's all up to the good partner there in the foreign country. We have decided to do deals in Asia only if the partner is suitable to us. --- One has to learn to be selective and not accept all the possible partners in the world."*

Beta has decided to concentrate on the European market and to few selected countries there (Ireland, Holland, Austria and France). The competitive situation between the prospective customers in any given country, the general industry and market conditions have been the strongest determinants in choosing with countries to market. The relatively close psychic distance to the mentioned countries (apart from France) has not been of much importance, they were rather chosen because of the close geographic distance. The company values customer intimacy and wants to be present locally in a form of a project manager at customer's premises (not subsidiaries). Not having a company employee working together with the customer so closely, Beta feels that it would not be able to stand behind its quality promises.

In summary it can be said that the validity of the concept of psychic distance is somewhat limited in the case companies. The psychic distance between countries has not necessarily diminished but the case companies have found ways to cope with and overcome possible problems it may cause.

8.2.5 The timing of internationalization

There is some controversy between the internationalization views mainly regarding the optimal timing of the initiation of the internationalization process. The Uppsala model favors late initiation, the INV emphasizes the need of early internationalization and the network model really says nothing about the timing at all. Eriksson et al. (1997, 353) for example suggest that companies are better off delaying international growth:

"M*any small mistakes in gradual internationalization allow management to form more realistic perceptions than do a single great mistake in a leap-frogging (according to INV) approach to internationalization*."

Also McHugh states that it is relatively rare for software start-ups to start exporting immediately and supports the view that software companies are

better off evolving from a domestic success, often by establishing home market leadership first (McHugh 1999, 145). Internationalization of Beta and Alpha has actually evolved from domestic leadership position. Beta had had some internationalization efforts but it decided to lay off further plans until reaching market leadership in Finland and gaining a position of strength in terms reputation.

On the other hand, McDougall & Oviatt (1994, 484) emphasize the learning factor in early initiation of internationalization for the later development:

"I*n the light of path dependence of competence development, new venture founders should consider whether establishing a domestic new venture with plans to later internationalize will be as successful a strategy as establishing a new venture that is international from inception.*"

The timing of internationalization for all three case companies seemed to have happened, very interestingly, at roughly the same time (1995 for Alpha and Beta, Gamma as soon as established in 2001). This would support the findings of Andersson who suggested that the internationalization should be examined in the light of industry developments. The software industry started growing rapidly in the 1990s and the two companies realized the potential of internationalization very soon as means of growth. On the other hand, Gamma was established in 2001, at time that the software industry was still experiencing rapid growth, thus enabling, or maybe even forcing, the company for early internationalization. Arenius (2002, 157) in turn emphases the importance of speed as defined in terms of the time lag between founding and internationalization:

"*As opportunity windows are small… It is crucially important that technology-based new firms find as many markets as possible in as short a time as possible, and nowadays that means going global.*"

Also Oviatt and McDougall (1994) support this view by saying that early internationalization is especially important for knowledge-intensive businesses (such as software companies), which need to develop international mechanisms to protect their commercial value from expropriation. Of the case companies only Gamma felt the early internationalization crucial. This is perhaps due to the fact that Gamma's target niche is the narrowest and the home market itself could not provide sufficient sales even to remain profitable. Nevertheless, even Gamma had some domestic sales before looking into international markets.

8.2.6 Internationalization summarized

The three case companies analyzed started to internationalize at varying ages, but during the general software industry growth period. All of the case companies reached a market leadership position in Finland to some extent before truly aiming at international growth. This seems to go accordingly to the McHugh's framework. But as in many other studies, the case companies in this study also proved that the narrower the market niche, the more likely a company is to internationalize at early stages of the company development. When the domestic market can not sustain profitability, a company is forced to internationalize soon after foundation. On the other hand, if home market provides sustainability, a company and its management need to be ambitious enough (towards further/higher growth) to start internationalization. Otherwise the company can easily turn into a so-called lifestyle business providing comfortable living to the owners/founders.

Alpha was able to grow within the Finnish market for 30 years before entering international markets as it expanded its product offerings to other domains apart from the initial target market. Securing home market leadership position has been valuable to Beta as well; gaining a reliable reputation in Finland has enabled the company to look into foreign markets again with higher expectations than on the first try. Whether a company is reactive or proactive

towards internationalization also seems to be associated also with the general growth ambitions. Only when a company has decided that it is willing to grow, it is likely to start looking proactively for internationalization opportunities.

For the largest of companies, Alpha, who had had solid domestic operations for 30 years, the internationalization was most rapid once initiated. The long domestic history perhaps provided the company the needed resources (financial, human etc.) for this rapid internationalization. The company chose to expand operations with first establishing subsidiaries in the target markets, which in general is considered more risky and a demanding mode than, for example, exporting. On the contrast, the two smaller case companies have chosen less risky and less demanding modes of internationalization, as obviously they were lacking the resources that Alpha had. These two companies used mainly partnership or direct exporting as means of internationalization. All the three companies can be said to have benefited from networks in their internationalization. Beta and Gamma have had most help from the CEOs' personal connections and previous experience in the industry. Also evident in the case companies was the fact that they did not proceed according to Uppsala model's establishment chain but seemed to keep the chosen entry modes static and not change it over time in a given market or in new markets entered. Again the age of a company and its stability seem to have an effect on this. Small companies use the less resource requiring modes and more established ones are more prone to use i.e. subsidiary mode.

It is obvious that none of the internationalization models presented in chapter 4 can explain on its own the process of internationalization of the case companies. The case companies reflect same patters explained by the models but also seem to have some very unique characteristics in their internationalization process. Also some similar patters to internationalization of software companies discussed in earlier studies (in chapter 5) could be found. It seems that the software business is very unique industry and as such presents aspects that

have not been investigated enough in the existing models of internationalization.

9 MODIFIED LIFECYCLE FOR COMPANIES OPERATING IN THE SOFTWARE BUSINESS

This chapter introduces the modified model of company life cycle based on the earlier chapters of this research.

9.1 Limitations in the existing company life cycle models

Certain limitations in the existing life cycle models can be found if evaluating the life of a typical Finnish software company. First of all, general life cycle and company growth models are quite old, and they were developed based on observations of companies operating in for totally different types of industries than software industry. Also limiting the applicability of the models, which are previously discussed in this study, is that they do not describe very well small companies like the most of the software companies in Finland are. Even though few company life cycle models are specifically developed for small businesses (Churchill & Lewis 1983, Scott & Bruce 1987), most of them are developed for bigger organizations than what a typical Finnish company is. Also, as evident in the previous chapters, it is very common amongst researchers to view growth as a series of phases and stages of development through which a company may pass in its life cycle. However, for example Miller & Friesen (1984) have indicated in their study, that the real life differs from theories and companies rarely go through the same stages in a linear order.

The stage models tend to assume that all companies go through each stage or fail doing so. In our opinion, it is not necessary for a company to advance through all the stages. A company may skip one or more stages or drop back and variations in sequence can occur (see Churchill and Lewis, 1983; Eggers et al, 1994; Hanks et al, 1993). Also, apart from Kazanjian's (1988) model, the most of the reviewed models do not consider the time before the actual foundation of the company which can be viewed as another limitation to the existing models.

Typically the life cycle and growth models consist of two dimensions: business size, and company maturity or stage of growth (in terms of sales and the number of employees). Although relevant, the age of the company should not be the measurement for the maturity of the company. We agree with Churchill and Lewis (1983) in that there are several other factors which also affect on company's maturity and development, i.e. the style of the owner, management style and organizational goals.

The models also expect that all companies are willing to aim for growth. As stated in chapter 5 (Viitala & Jylhä, 2004; Junkkari, 2004; Nambisan, 2002), this is not the case in an increasing number of companies, especially in Finland. Another specific feature, which is very common among small software companies, is that the company can be founded with the one and only goal: fast growth and selling of the business.

The traditional life cycle and growth models introduced in this paper have been developed to describe growth patterns and organizational characteristics of companies in different stages. However, they do not address the aspect of internationalization or early growth as part of the models as such. In today's global economy, as part of their growth strategy, many companies choose to expand from domestic to international markets often at very early stage of their life. The decision of international expansion is critical especially for SME companies who often have a small financial base, limited resources and limited home market. The fact that most of the existing models do not consider the internationalization as means of growth, or in any other form, is a major shortage in them. Growth, and managing it successfully, is in fact a critical point in any company's life. This is especially true for companies in high technology industry, which often requires a company to internationalize its operations in order to grow or in cases, even to survive at all.

There have, however, been several studies concentrating on the influence of different internationalization theories and models on company growth (Autio & Garnsey 1997, Lu & Beamish 2002, Yli-Renko et al 1998). At the same time it has been recognized by several authors that there is not a generally accepted framework explaining the (early) growth of start-ups or new ventures (Freeser 1989, Autio & Sapienza 2000). Autio and Sapienza (2000) for example, have argued that companies that internationalize early (i.e. born globals), grow also more rapidly at earlier stages than older entrants because of their learning advantages. According to LeBrasseur et al (2003), rapid growth during a venture's early years may necessitate major changes to how the organization manages strategy, resources and its internal structure. Autio and Garnsey (1997) argue that a company's early growth depends on effective external relations with other organizations.

The statement below summarizes the limitations of the existing models and forms the idea around which we have based our proposed model.

> "*…the cyclical quality of organizational existence. Organizations are born, grow, and decline. Sometimes they are reawaken and sometimes they disappear* (Kimberly & Miles 1980, ix)."

9.2 Proposed model

A model for Finnish software product company growth is proposed on the basis of the life cycle models presented, the literature on the internationalization process of a company, and observations of the software business, together with writers' personal opinions. The phases that a software company experiences in its life cycle are described in this chapter.

The phases presented are descriptions of possible events and situations a Finnish software company may face or go through during its existence. Although we use the phrases 'stage' and 'phase', the phases are not to be

considered as linear sequential stages in a life cycle and it should also be noted that a company can face the described situations in any order or not experience all of them at all. Age and size are not limiting nor determining factors in this model; company experiencing any of the proposed "phases", can virtually be of any age or size. Growth can also be a discontinuous process. The descriptions of the phases are meant to be showing the common patterns and characteristics that were found both in literature and in the case companies.

9.2.1 Birth phase

The birth phase is the period before a venture's actual foundation. It is included in the model because in Finland entrepreneurship is highly encouraged in several ways. Innovation has an important status within the Finnish society and to foster the best ideas into profitable businesses, there are several grants and prices for innovations and business ideas. Also the culture of university research and incubators supported by the government enhance innovativeness. In fact Finland ranks high in innovation (see Junkkari, 2004). Due to these reasons there are numerous "companies" in Finland experiencing the birth phase but which (for reasons briefly mentioned at the end of this sub-chapter) may never evolve into a legal entity.

In Finland a new venture is often a spin-out of another existing company or a result of university research. The venture is based on developing an innovation into a new technology or business. Activities are centered round the developing the idea into a real software product. The venture typically consists of only few people who are either technically oriented, in a case of a technology innovation, or business minded if the case is more of a business idea. In our opinion, the former is more common within the software business in Finland. The new venture typically does not make any profit at this time and is financed by the people working with the innovation. Organization structure is likely to be nonexistent and typically no real strategies are in place.

It is possible that some ideas are never turned into real businesses as a result of lacking business mentality or funding. Financial issues are in fact often seen very problematic when in reality there is enough money available for new companies.

9.2.2 Start-up and commercialization phase

The venture becomes a legal entity; the actual foundation of the company takes place. There are a number of public sector agencies and associations in Finland that can provide invaluable help to new companies. They can for example guide a company through founding procedures, provide funding and help for development and commercialization of the business idea.

There are two alternative ways for a start-up company to proceed after its founding. If company is started by founders that consider themselves as technically oriented, it is more likely that the venture is more interested in developing technically superior products than building on the selling side of their business. The founders' technical orientation can account for a slow start as founders try to develop technically complex products to satisfy the requirements of their home market. If there are some business oriented people within the company, commercialization of the technology or product is bound to happen quite soon after the legal establishment. However, in either case it would be critical to obtain the first real customers and secure some (outside) financing to keep the business running. Presumably more people will join the company, and the first employees may also be hired. Organization structure is quite informal, as little is needed with only few people working in the company.

9.2.3 Growth

The transition between the founding of the company and their first steps towards growth represents a critical juncture in the life cycle of a company. There has been little attention given to the question why companies (their founders and managers) decide to attempt to grow (Mullins, 1996).

As stated in the model by McHugh, there are some factors that influence whether company will start to grow or not. The ambition for growth is crucial, as there are many entrepreneurs that simply do not want their businesses to grow but merely just to provide a living. But if the company is ambitious enough, has a good product, an effective management team and sufficient funding, it is ready for the growth.

9.2.3.1 Slow growth

Initial growth will come mostly from the domestic market. After having obtained the first customers, the company should widen the customer base to become more firmly established and profitable. In general, multiple references can create credibility whereas lack of them may bring the company's process to a halt. As found evident within the case companies and also stated by McHugh (1999) it is relatively rare for software product companies to start international operations immediately, rather they establish home market leadership first (see also differing opinion Bell 1995; Coviello & Munro 1995; Oviatt & McDougall 1994). Domestic sales are typical in the beginning also for Born Global companies although the general opinion is that Born Globals may not have domestic sales at all. The case companies stated that it is cheaper to learn many lessons, regarding the product and sales, at home rather than trying to solve them from a distance. Securing the home market first allows a company to start internationalization in terms of balanced organization, finance and reputation gained.

This follows more the Uppsala view of internationalization by which companies are expected to develop within their home market for some time before international activities are initiated. This, however, may not be feasible for all companies. Regardless of limited resources, small technology companies from small markets, such as Finland, may decide to become international at very early stage. This is especially the case, if there are more business oriented people (with international experience) among the founders. In other words, it is likely that the company will start seeking for some growth also through international opportunities as the small home market would not even sustain profitability.

9.2.3.2 High growth

If not happened already in the slow growth period, usually the original founder-CEO is replaced or supported by experienced professional manager(s) who is able to steer the company into higher growth and success. Some companies may start internationalization only during this phase, some in the previous. However, most of revenue comes from foreign markets. Company establishes presence in many countries and the internationalization can be rapid.

According to Arenius (2002, 157), as the opportunity windows are small, speed (defined as the time lag between foundation and internationalization) has become critical. It is crucial for high-technology companies, such as software companies, to find as many markets as possible in as short time as possible to protect their commercial value from expropriation.

To successfully cope with explosive growth, companies need to have capabilities to collaborate with other companies. Companies have been reported to accelerate their internationalization process and to manage their problems of success by forming business relationships to gain access to distribution

networks, technology, market knowledge and information. They may not be as successful if relying solely on their own capabilities and resources. The networks can open up many new opportunities in internationalization. (Chetty & Campbell-Hunt 2003, 12-17)

The high growth can occur at any time of company's life, and it could also occur more than once or instead of slow growth. For example, a company that has already experienced high growth, but is now more a stable company, can experience high growth again in the future. This is naturally influenced by the market trends, and the stage of the industry it is operating in.

9.2.4 Stability

Stability can mean operating at a -+level, the survival however is not really in question. Some employees may be added or let go occasionally. Stability can also occur at any point of company's life and more than once. A company may choose to roll into stability, for example, after a high growth period in order to evaluate its current position and future objectives.

Since some companies do not want to grow, stability can be seen as the level at which the not so ambitious companies, the so-called lifestyle businesses, operate. These lifestyle businesses are organizationally often much alike the start-up companies.

9.2.5 Acquisition

A very typical situation in the software business is that a small company is acquired by a larger player in the market or mergers between companies occur. This can happen in any point of the company's life. According to McHugh (1999), growth can happen organically or through acquisitions. Usually after an acquisition or a merger, the company continues operating as an independent business unit.

There are also companies which are founded based on a strategy that the company is sold as soon as opportunity arises. Founders of these companies are likely to start another company soon after exiting the previous one.

9.2.6 Out of business

Occasionally a company's potential is constrained for some reason and it may go out of business. Reasons may include entrepreneur's loss of interest, declining demand for product or a low product innovation followed by a decrease in profitability of the company. The software industry is also very volatile and fluctuations within it may affect some companies more than others. Further, if operating only domestically in a small country like Finland, market may dry up, and company begins to decline with it.

9.2.7 Summary of the proposed model

According to our proposed model, a Finnish software company does not develop in a linear manner through stages. Instead, there are certain types of situations that a company experiences during its existence. A company starts with a business or technology idea, which then does or does not turn into a legal start-up, depending on various factors. A company will most likely experience some kind growth, slow or fast, soon after founding or later on the road. Although first growth is usually obtained from the domestic market, it is clear that internationalization plays an important part in the software companies' life cycle and due to the limited home market in Finland, it often is the major mode of growth. On the other hand, the founder or management of a company may choose not to seek for any particular growth, both in terms of turnover or size of the company. These types of companies are most likely to stay within the stability for most of their existence. Sometimes companies are also acquired by or merged with other players in the industry, thus coming to an end of company's lifecycle. And some companies will go out of business,

some before been officially founded, and others later in their life for various reasons.

In each "phase" of the proposed model, some typical characteristics of a software company and the software industry can be seen. The proposed model is developed to describe a life of a Finnish software company in particular as culture and business practises of any given country are bound to influence a life of a company.

10 CONCLUSION

This chapter presents conclusions of the study and the implications of the findings. It also gives recommendations for further research. This study has investigated the life cycle and internationalization process of the Finnish software product companies. The study was conducted as a multiple case study in which three case companies were interviewed and analyzed. Analysis was based on existing models of company life cycle and internationalization processes.

Software industry was briefly introduced in chapter 2 to provide an understanding of the characteristics and impacts of the industry. Several company life cycle models were reviewed in chapter 3 to gain broad understanding of company growth and development. Also concerning company internationalization were introduced in chapter 4. In addition, in chapter 5 the software specific studies of company growth and internationalization were presented to build a ground for a case company analysis.

One of the purposes of this study was to analyze how Finnish software product companies mature and internationalize. This was done in chapters 7 and 8 where the case companies were analyzed by and reflected to the presented models of company life cycle and internationalization processes.

10.1 Theoretical implications

General life cycle and growth models together with internationalization process models were used as a background theory in this thesis. The generic company life cycle models found in existing literature present typically company's development as a sequence of linear stages, which company goes through in predefined order. These models were reviewed to see whether they can explain the life cycle of Finnish software companies.

The company life cycle models presented in this thesis were Greiner's (1972) evolution and revolution theory, two models developed for small business by Churchill & Lewis (1983) and Scott & Bruce (1987) as well as the life cycle models specifically developed for high-technology companies by Nambisan (2002), Kazanjian (1989), Galbraith (1982) and McHugh (1999).

The generic life cycle models reviewed have too many limitations to be suitable for software companies. Software business is unique and differs from other industries. Characteristics of software business include rapid growth and high rate of product and process innovation. Software business does not either really manufacture concrete products; software is developed and in a way abstract. This could also explain why some life cycle models developed for high-technology-based companies do not seem to apply to software product companies. Another matter can be the high age of the models, they are not very recent.

Also typical for software product companies is the short product life cycle (e.g. games can live only few months). This results to that the software product companies also experience equally short company life cycles. Even being quite mature company in software business, the generic life cycle would position the company into the first or second phase (Start-Up or existence and Survival). The key dimensions and factors (affecting to the company development) presented in the existing literature (also used in the life cycle analysis in chapter 8) are not the best ones to explain software company's growth and development. The factors of these generic models can be found in software companies (as seen in life cycle analysis in chapter 8), but they should be stressed differently in software companies. Nambisan (2002) presents a table of external and internal factors determining software firm's growth and evolution (table is presented in chapter 5.1). Unfortunately, Nambisan's (2002) own model is limited to innovation-orientation of internal stakeholders and not to these factors.

The timing of Finnish software companies' growth was also researched. There is no exact point or stage when company experiences growth. The growth can be achieved by companies with wide range of size and age characteristics. Some companies grow moderately over a long period of time, others start growing rapidly only few years after establishment. Common to the most growing companies is the growth in domestic markets. Company can also feel its way through first years before finding the right target market with the right product. Therefore the careful strategic planning is emphasized. One of the most important factors in growth is the commitment of the leader of the company.

The state of industry affects on the growth rate of the company. Company matures and grows faster in a high-growth industry than in a low-growth industry. Another matter to be emphasized is the growth willingness. The life cycle models assume growth to be obvious, but not all of the companies are willing to grow.

In the presented models the internationalization process is described in quite distinctive ways and there is no consensus among researches which internationalization theory has the most merits or is best applied to company internationalization process. The main theories of internationalization on which the study was built are the Uppsala internationalization model, the network view and the international new venture approach. It seems that each of the models have some advantages over the others in certain situations. The Uppsala model is the most detailed description of an internationalization process but that is surely due to the fact that the other theories presented are fairly new and have not yet been researched and empirically tested as thoroughly. The biggest controversy between these three theories regards the optimal timing of the initiation of the internationalization process. According to the stages theory, a company needs to be well established domestically before starting international operations whereas the born global view does not consider establishment in the

domestic market that important. In the born global approach companies internationalize quickly thus they may have either a small domestic market or no domestic market at all. According to the stages theories, a strong domestic market is required to support companies in their international efforts. On the other hand, in the network theory, the timing of the internationalization is more influenced by the external actors (network relationships). In addition, it should be noted that as the born global concept has not truly developed into a detailed theoretical model of internationalization, as it is rather a description of certain type of a company, the concept should be further researched and theorized to fully examine if it is really a new way of internationalization.

What does seem be agreed among researchers is that the recent changes in technological, economic and social conditions call for, at least, some adjustments for the traditional theories. There has been growing evidence that some companies leapfrog into internationalization rather than proceeding gradually as suggested by the stages approach. The trend of accelerated internationalization has raised new questions that need to be studied.

In regard to the studies of internationalization of software companies, it seems fairly obvious that Uppsala model needs more than a minor adjustment in the context of software business. All the earlier studies that were reviewed concluded, and the analysis of the case companies further confirmed that the stages theory does not hold true for software companies. It seems that a software company's internationalization process can be rapid once initiated, with companies using a variety of mechanisms to enter a diverse number of foreign markets. This was especially true for companies that were targeting very narrow and highly specialized niches. Thus, being firmly established in the domestic market was not necessarily a precondition for internationalization and export success. Neither the size nor the age of the software company had a significant influence on the decision to internationalize. Obviously, the dynamic

nature of software business and the need to commercialize new applications as fast as possible were important considerations.

10.2 Practical implications

Company growth and internationalization are well covered in literature and software company internationalization has been researched in some recent studies. However, especially the company life cycle models are somewhat outdated and the context of the dynamic software industry is not discussed in them. In addition to this, the aspect of internationalization is mostly overlooked in the models. Although, few of the life cycle models are specifically developed for high-technology companies and one even for software companies, in our opinion they were not suitable as such for explaining the development of our case companies.

In-depth literature review and the empirical data showed that development and internationalization of Finnish software product companies could not be explained in terms of any of the single existing model. Therefore, a model that combines aspects of several different models with empirical observations was proposed. According to our proposed model, a Finnish software company does not develop in a linear manner through stages. Instead, there are certain types of situations that a company experiences which are described (a bit falsely) as the following "phases": birth, start up–commercialization, slow growth, high growth, stability, acquisition and out of business.

Although first growth is usually obtained from the domestic market, it is clear that internationalization plays an important part in the software companies' life cycle and due to the limited home market in Finland, it often is the major mode of growth. Desire to grow has been the one most important determinant for the case companies to start internationalization. But at the same time it should be noted that not all companies wish to grow.

10.3 Limitations of this study

The fact that we had only three case companies could be seen as a limitation of this study. In our opinion they, however, do represent the Finnish software companies quite well as the product characteristics of these companies were quite different along with their target markets, age and size. But these are factors from which is difficult to say whether they really had an influence or not on the results.

The limitation of our proposed model is that it does not either consider the external and internal factors which determine software company's growth and evolution or any other key factors which explain the growth and development of software company.

10.4 Suggestions for further research

Suggestion for future research could be developing the proposed life cycle model for Finnish software companies further. This model should include the determining factors (see chapter 5.1) of software company growth as a starting point. It should also be kept in mind that the studies about the internationalization of software companies presented in this paper were conducted over the time of rapid industry growth and thus may have affected the findings. Therefore, the internationalization of newer software companies which began the process of internationalization in a maturing rather than new or growing industry should be examined in the future.

REFERENCES

Ahokangas P. & Pihkala T. 2002. Menestyvä yritys. Helsinki: Edita.

Andersen O. 1993. On the Internationalizations Process of Firms: A Critical Analysis. Journal of International Business Studies, 24(2), 209-231.

Andersson S. 2004. Internationalization in different industrial context. Journal of Business Venturing 19 (2004), 851-875.

Andersson S. & Wictor I. 2003. Innovative Internationalization in New Firms: Born Globals –The Swedish Case. Journal of International Entrepreneurship 1, 249-276.

Arenius P. M. 2002. Creation of firm-level social capital, its exploitation, and the process of early internationalization. Helsinki University of Technology, Doctoral dissertation.

Autio E. & Garnsey E. 1997. Early Growth and External Relations in New Technology-Based Firms. Paper presented at USASBE Annual National Conference Entrepreneurship, San Francisco, USA. Available at <URL: http://www.usasbe.org/knowledge/proceedings/1997>.

Autio E. & Sapienza H. 2000. Comparing process and born global perspectives in the international growth of technology-based new firms. Helsinki University of Technology. Working paper series 2000/2.

Axelsson B. & Easton G. (eds.) 1992. Industrial networks: A new view of reality. London: Routledge.

Bell J. 1995. The internationalization of small computer software firms. A further challenge to "stage" theories. European Journal of Marketing 29(8), 60-75.

Bengtsson L. 2004. Explaining born globals: an organizational learning perspective on the internationalization process. International Journal of Globalisation and Small Business, 1(1), 28-41.

Bloodgood J., Sapienza H. & Almeida J. 1995. The internationalization of new high potential ventures: Antecedents and outcomes. In Bygrawe W., Bird B., Birley S., Churchill N., Hay M., Keeley R. & Wetzel W. (eds.). Frontiers of Entrepreneurship Research, Babson College, Massachusetts, 533-546.

Buckley P. J. & Ghauri P. N. (eds) 1999. The Internationalization of the Firm. 2nd ed. London: International Thomson Business Press.

Burgel O. & Murray G. C. 2000. The International Market Entry Choices of Start-Up Companies in High-Technology Industries. Journal of International Marketing 8(2), 33-62.

Cavusgil S.T. & Knight G.A. 1996. The Born Global Firm: a challenge to traditional internationalization theory. Advances in International Marketing 8, 11-26.

Chetty S. & Campbell-Hunt C. 2003. Paths to internationalization among small–to medium-sized firms. A global versus regional approach. European Journal of Marketing 37(5/6), 796-820.

Chetty S. & Campbell-Hunt C. 2004. A Strategic Approach to Internationalization: A Traditional Approach Versus a "Born-Global" Approach. Journal of International Marketing 12(1), 57-81.

Churchill N. C. & Lewis V. L. 1983. The five stages of small business growth. Harvard Business Review 61(3), 30-49.

Coviello N. & McAuley A. 1999. Internationalisation Processes and the Smaller Firm: A Review of Contemporary Research. Management International Review 39(3), 223-256.

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

Coviello N. & Munro H. 1997. Network Relationships and the Internationalisation Process of Small Software Firms: International Business Review 6(4), 361-386.

Crick D. & Jones, M. 2000. Small High-Technology Firms and International High-Technology Markets. Journal of International Marketing, 8(2), 63-85

Erikson K., Johanson J-A., Majkgard A. & Sharma D. 1997. Experiential knowledge and cost in internationalization process. Journal of international business studies 15(4), 337-360.

Fillis I. 2001. Small firm internationalisation: an investigative survey and future research directions. Management Decision 39(9), 767-783.

Finnish Software Business Cluster [online]. Referred on Jan 15, 2005. Available at: <URL: http://www.swbusiness.fi>

Forsgren M. 2002. The concept of learning in the Uppsala internationalization process model: a critical review. International Business Review 11, 257-277.

Gabrielsson P. 2004. Globalising internationals: Product strategies of ICT companies. Helsinki: Helsinki School of Economics. Available at: <URL: http://helecon3.hkkk.fi/pdf/diss/a229.pdf >

Gankema H. G. J., Snuif H. R. & Zwart P. S. 2000. The Internationalization Process of Small and Medium-sized Enterprises: An Evaluation of Stage Theory. Journal of Small Business Management Oct 2000, 15-27.

Geust N. & Autio E. 1994. External technology impact of new, technology-based companies. Otaniemi: Helsinki University of Technology.

Gibb A. & Davies L. 1990. In pursuit of frameworks for the development of growth models of the small business. International Small Business Journal 9(1), 15-31.

Greiner L.E. 1972. Evolution and Revolution as Organizations Grow. Harvard Business Review 50(4), 37-46.

Hanks S. H., Watson C. J., Jansen E. & Chandler G. N. 1993. Tightening the Life-Cycle Construct: A Taxonomic Study of Growth Stage Configurations in High-Technology Organizations. Entrepreneurship Theory & Practice 18(2), 5-29.

Hill J., Nancarrow C. & Wright L. T. 2002. Lifecycles and crisis points in SMEs: a case approach. Marketing Intelligence and Planning 20(6), 361-369.

Johanson J. & Mattson L. G. 1988. Internationalization in industrial systems –a network approach. In Hood N. & Vahlne J-E. (eds.) 1988. Strategies in Global Competition. London, New York, Sydney: Croom Helm.

Johanson J. & Vahlne J-E. 1977. The Internationalization Process of the Firm: a Model of Knowledge Development and Increasing Foreign Market Commitments. In Buckley P. J. & Ghauri P. N. (eds.) The Internationalization of the Firm. 1991. London: International Thomson Business Press.

Johanson J. & Vahlne J-E. 1990. The Mechanism of Internationalization. International Marketing Review, 11-24.

Johanson J. & Vahlne J-E. 2003. Business Relationship Learning and Commitment in the Internationalization Process. Journal of International Entrepreneurship 1, 83-101.

Johanson J. & Wiedersheim-Paul F. 1975. The Internationalization of the Firm: Four Swedish Cases. In Buckley P. J. & Ghauri P. N. (eds.) The Internationalization of the Firm. 1991. London: International Thomson Business Press.

Junkkari M. 2004. Miksi yritykset eivät halua kasvaa? In Helsingin Sanomat, Nov 1, 2004, B9.

Kazanjian R. K. 1988. Relation of dominant problems to stages of growth in technology-based new ventures. Academy of Management Journal 31(2), 257-279.

Kazanjian R. K. & Drazin R. 1990. A stage-contingent model of design and growth for technology-based new ventures. Journal of Business Venturing 5 (3), 137-150.

Kimberly J.R. & Miles R.H. 1980. The organization life cycle. San Francisco: Jossey Bass.

Knight G. & Cavusgil S. T. 1996. The born global firm: A challenge to traditional internationalization theory. Advances in International Marketing 8, 11-26.

Kuivalainen O. 2003 Knowledge-based view of internationalisation – Studies on small and medium-sized information and communication technology firms. Lappeenranta University of Technology, Doctoral dissertation.

Lindmark 1994. Småföretagens Internationalisering: –en nordisk studie jämtförande studie. Nord REFO 1994:7.

Lindqvist M. 1986. The internationalization process in small, high-technology firms. Stockholm: Stockholm School of Economics.

Lindqvist M. 1991. Infant Multinationals: The Internationalization of Young, Technology-Based Swedish Firms. Stockholm School of Economics, Institute of International Business, Doctoral dissertation.

Luostarinen R. & Gabrielsson M. 2002. Globalization and Global Marketing Strategies of Born Globals. Paper presented at the Annual Conference of the European International Business Academy on 8-10 December 2002 in Athens.

Madsen T.J & Servais P. 1997. The internationalization of Born Globals –an evolutionary process? International Business Review 6(6), 561-583.

Majkgård, A. & Sharma D.D. 1998. Client-Following and Market-Seeking Strategies in the Internationalization of Service Firms. Journal of Business to Business Marketing 4(3), 1-41.

Malhotra N. K. , Agarwal J. & F. M. Ulgado. 2003. Internationalization and Entry Modes: Multi-Theoretical Framework and Research Propositions. Journal of International Marketing 11(4), ix-xiv.

McDougall P. & Oviatt B.M. 2003. Some Fundamental Issues in International Entrepreneurship. Entrepreneurship Theory & Practice, July 2003.

McHugh P. 1999. Making it big in software. Tiverton: Rubic Publishing.

McNaughton R. 2003. The Number of Export Markets that a Firm Serves: Process Models versus the Born-Global Phenomenon. Journal of International Entrepreneurship 1, 297-311.

Moen O. & Servais P. 2002. Born Global or Gradual Global? Examining the Export Behavior of Small and Medium-sized Enterprises. Journal of International Marketing 10(3), 49-72.

Mullins J. 1996 Early growth decisions of entrepreneurs: the influence of competency and prior performance under changing market conditions. Journal of Business Venturing 11, 89-105.

Nambisan S. 2002. Software firm evolution and innovation-orientation. Journal of Engineering and Technology Management 19, 141-165.

National Research Council Staff. 1991. Intellectual Property Issues in Software. National Academy Press: Washington D.C.

Nummela N. 2000. SME Commitment to Export Co-operation. Publications of Turku School of Economics and Business Administration.

Ohjelmistoyrityskartoitus 2004. Jokinen J-P, Maula M. & Hietala J. Helsinki University of Technology.

Oviatt, B.M. & McDougall P. 1994. Toward a Theory of International New Ventures. Journal of International Business Studies 25(1), 45-64.

Oviatt, B.M. & McDougall P. 1997. Challenges for Internationalization Process Theory: The Case of International New Ventures. Management International Review 1997/37, 85-99.

Rasmussen E.S. & Madsen T.K. 2002 In "The Born Global Concept. 28th EIBA Conference, special session "SME internationalization and born globals – different European views and evidence".

Rialp-Criado A., Rialp-Criado J. & Knight G.A. 2003. The phenomenon of international new venture, global start-ups, and born globals: What do we know after a decade (1993-2002) of exhaustive scientific inquiry?.

Scott, M. & Bruce, R. 1987. Five stages of growth in small businesses. Long range planning 20(2), 45-52.

Smallbone D., Leigh R. & North D. 1995. The characteristics and strategies of high growth SMEs. International Journal of Entrepreneurial Behaviour & Research 1(3), 44-62.

Smilor R.W. & Gill M.D. 1986. The New Business Incubator : Linking Talent,Technology, Capital, and Know-How. Massachusetts: Lexington Books.

Viitala R. & Jylhä E. 2004. Menestyvä yritys: liiketoimintaosaamisen perusteet. Helsinki: Edita.

Welch D.E. & Welch L.S. 1996. The Internationalization Process and Networks: A Strategic Management Perspective. Journal of Internaitonal marketing 4(3), 11-28.

Yli-Renko H. & Autio E. 1998. The Network Embeddedness of New, Technology-Based Firms: Developing A Systemic Evolution Model. Small Business Economics 11, 253–267.

Zahra S., Matherne B. & Carleton J. 2003. Technological Resource Leveraging and the Internationalization of New Ventures. Journal of International Entrepreneurship 1, 163-186.