The first customer reference

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ABSTRACT

Marketing and sales have generally been recognized as typical bottlenecks for start-up technology companies which produce complex products for corporate customers. Start-up technology companies often need a customer reference to support their efforts in entering the market. Without a real-world assessment that the first customer reference represents, it is difficult to convince the next potential customer to buy.

The first customer reference, the topic of this study, has not been widely considered in the literature. Therefore, in order to close this research gap, a conceptual sub-study is conducted by employing a domain modeling technique to identify several closely related concepts. The identified concepts are investigated further by means of a literature study. New concepts are defined and based on these a descriptive model is created to increase the understanding of the problem domain. This also assists in early detection of factors for further sub-studies. This study conducts a multiple case sub-study, a survey sub-study with statistical analyses and a single longitudinal case sub-study including a triangulation sub-study of the previous three empirical sub-studies.

Both method triangulation and theory triangulation are used. Field data was collected by means of semi-structured interviews and a survey. In total, 36 Thai software companies were interviewed in order to collect information relating to their first customer reference cases. The data was analyzed by using an inductive multiple case study method supported with a survey method including statistical analyses and a single longitudinal case study method. The inductive multiple case study method was used to identify the key variables and to create a basic descriptive framework. The statistical analyses were conducted to study the importance of each variable and to test how well the variables explain the growth of the companies. The single longitudinal case study method was intended to anchor the results of the previous studies to a real business case. Finally, based on the analyses, a predictive model is proposed. A secondary sample from a different business landscape was employed to gain a deeper understanding of the phenomena and to explore how broadly the results from the primary sample could be generalized.

The results of this study increase the understanding of how start-up companies which produce complex products for corporate customers can capitalize on the market potential with the aid of a first customer reference. Based on the analyses the five variables contributing to the successful market entry of start-up technology companies were identified. Accordingly (1) a start-up technology company shares the costs of the

first implementation with the first reference customer; (2) it uses the first customer reference for learning experimental knowledge in order to formulate the sales and marketing arguments and (3) it does not use the first customer reference for learning the correct technology; (4) its first reference customer operates in a key industrial sector of the country; and (5) in addition, the educational background of the entrepreneur is an important contributor to successful market entry. The single longitudinal case sub-study, including three embedded customer cases, illustrates how the variables form the pre-predicates and post-predicates for an iterative market entry.

This study reports that only in a few cases the start-up technology companies had employed a customer reference to support their sales effort. Thus, a constructive sub-study was conducted in order to create a construction of how a customer reference could be used to produce marketing material. The construction was created based on the results of this study and on the literature review. Finally, the construction was tested with empirical data. Because of the encouraging outcome of the sub-study, further constructive studies are proposed in order to support the market entries of start-up technology companies in practice.

This study is not the only study in the discipline of high technology and entrepreneurship in Thailand, but it is probably among the largest studies with multiple sub-studies and methods, although the sample size of the study was limited. This study has opened the doors for larger studies in the discipline in question, at least in Thailand, but likely also in other Southeast Asian countries. A major part of present entrepreneurship studies has been done either in the USA or Europe but relatively scantly in Southeast Asia.

In the published articles related to this study and accordingly in this study, several research methods have been applied, which have not been used or have been used scarcely in the present research discipline. The research methods are the domain modeling, which is used for conceptual modeling in knowledge engineering; theory triangulation of the studies, which is used for increasing internal validity of results; and the constructive research approach, which is used for bringing research results into practice. Therefore, this study is a pioneer study in developing and in adopting methods used mainly by the other research disciplines.

The phenomenon studied by the present author has previously been scantly investigated, thus making this study unique. The results and methods are available through this research report and also through published articles for scholars, practitioners and a larger audience.

Keywords: high technology market, start-up technology company, reference customer

TIIVISTELMÄ

Uusien teknologiayritysten ongelmat liittyvät monesti myynnin edistämiseen. On käytännössä osoittautunut, että myynnin edistämiseen tarvitaan asiakasreferenssi erityisesti silloin, kun uusi yritys on myymässä kompleksisia tuotteita toisille yrityksille. Tämän tutkimuksen aihetta, ensimmäistä asiakasreferenssiä, on aiemmin tutkittu suhteellisen vähän. Tämän tutkimuksen tavoitteena on lisätä ymmärrystä siitä, miten kompleksisia tuotteita toisille yrityksille myyvät uudet teknologiayritykset pystyvät hyödyntämään markkinapotentiaalin ensimmäisen asiakasreferenssin avulla.

Käsitteet identifioitiin käyttäen hyväksi tietojärjestelmien määrittelyssä sovellettua kohdemallinnustekniikkaa, jonka tuloksena myös saatiin malli käsitteiden välisistä suhteista. Tietämystä käsitteistä syvennettiin kirjallisuustutkimuksen avulla. Mallinnuksen tuloksena myös identifioitiin joukko uusia käsitteitä. Lisäksi kirjallisuustutkimukseen ja mallinnukseen perustuen löydettiin alustavat muuttujat monitapaustutkimusta varten.

Tässä tutkimuksessa käytettiin induktiivista monitapaustutkimusta tuettuna tilastollisilla analyyseillä sekä pitkittäistutkimuksella. Tätä tutkimusta varten haastateltiin 36 thaimaalaista yritystä. Haastatteluissa keskityttiin erityisesti yritysten alkuvaiheisiin ja siihen, miten yritykset olivat onnistuneet rakentamaan ensimmäisen asiakasreferenssin tukemaan myynnin edistämistä. Yritysten haastattelut tehtiin ensin käyttäen avoimia kysymyksiä suppeassa otoksessa ja sen jälkeen monivalintakysymyksiä laajassa otoksessa. Tutkimusaineiston analysoinnissa käytettiin useampia tutkimusmenetelmiä ja analyysin tuloksia tarkasteltiin lisäksi triangularisoimalla ne.

Induktiivisen monitapaustutkimuksen pohjalta pystyttiin tarkentamaan tutkittavat muuttujat ja niiden vaikutukset kolmeen päävaiheeseen, joilla konstruoidaan asiakasreferenssi tukemaan aloittavan teknologiayrityksen myynnin edistämistä. Tilastollisilla analyyseillä tutkittiin kunkin muuttujan merkitystä eri vaiheissa ja niiden vaikutusta erityisesti aloittavan yrityksen kasvuun. Pitkittäistutkimuksen avulla havaitut tulokset ja ilmiöt pystyttiin liittämään erään teknologiayrityksen aloitusvaiheeseen. Analyysien perusteella päädyttiin malliin, jolla voidaan ennustaa asiakasreferenssin hyödyntämisen onnistumista mitattuna yrityksen liikevaihdon kasvulla. Lisäksi vertailunäytteen avulla onnistuttiin syventämään tietoa havaituista ilmiöistä sekä lisäämään tietoa siitä, miten laajasti alkuperäisen empiirisen aineiston pohjalta tuloksia voidaan soveltaa.

Tulokset viittaavat siihen, että seuraavat muuttujat vaikuttavat uuden teknologiayrityksen myynnin kasvuun positiivisesti. Ensimmäisen referenssiasiakkaan sitoutumista aloittavaan teknologiayritykseen edistetään sillä, että teknologiayritys ja sen ensimmäinen asiakas jakavat keskenään ensimmäisestä asiakasprojektista aiheutuneet kustannukset. Ensimmäistä asiakasreferenssiä käytetään etupäässä myynti- ja

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markkinointiargumenttien eikä uuden teknologian empiirisen tiedon kartoittamiseen. Ensimmäinen referenssiasiakas toimii kyseisen maan avainteollisuusalueella. Lisäksi analyysien perusteella koulutustaso vaikuttaa siihen, miten tehokkaasti ensimmäistä asiakasreferenssiä pystytään hyödyntämään, sen lisäksi, että koulutaso itsessään saattaa vaikuttaa merkittävästi markkinoille pääsyyn. Pitkittäistutkimuksen pohjalta tässä tutkimuksessa kuvataan sitä, miten kyseiset muuttujat muodostavat alku- ja loppupredikaatit, kun aloittava teknologiayritys konstruoi ensimmäistä asiakasreferenssiä yhden tai useamman peräkkäisen asiakkaan avulla.

Tässä tutkimuksessa havaittiin myös, että asiakasreferenssejä on harvoin käytetty markkinointiargumenttien etsimiseen. Tämän takia tutkimuksessa päätettiin tehdä tähän liittyvä lisätutkimus käyttämällä konstruktiivista tutkimusotetta. Lisätutkimuksessa luotiin konstruktio kuvaamaan sitä, miten asiakasreferenssiä voidaan hyödyntää myynnin edistämisessä. Kyseinen konstruktio luotiin tämän tutkimuksen tulosten sekä kirjallisuustutkimuksen perusteella. Lopuksi konstruktiota testattiin empiirisellä aineistolla.

Tämä tutkimus ei ole ainoa korkeaan teknologiaan ja yrittäjyyteen liittyvä tutkimus, joka on tehty Kaakkois-Aasiassa, mutta monine alatutkimuksineen tämä tutkimus on todennäköisesti yksi laajimmista Kaakkois-Aasiassa tehdyistä, vaikkakin tämän tutkimuksen otoskoko on kohtalaisen suppea. Tämä tutkimus avaa mahdollisuuksia vastaaviin laajempiin tutkimuksiin samalla alueella. Lisäksi tämän tutkimuksen arvoa nostanee se, että suurin osa tämän päivän teknologiayrittäjyystutkimuksesta on tehty USA:ssa ja Euroopassa.

Sekä niissä artikkeleissa, jotka on julkaistu tämän tutkimuksen pohjalta, että vastaavasti tässä tutkimuksessa, on käytetty tutkimusmenetelmiä, joita ei ole aiemmin laajasti sovellettu tämän tutkimuksen tutkimusalalla. Nämä tutkimusmenetelmät ovat käsitteiden identifiointi kohdemallinnuksen avulla, teoriatriangularisointi tutkimustulosten luotettavuuden lisäämiseksi ja konstruktiivinen tutkimus, jonka avulla teknologiayrittäjät voivat käytännössä hyödyntää tuloksia myynnin edistämisessä. Tässä tutkimuksessa on tehty pioneerityötä tutkimusmenetelmien adoptoimisessa muilta tutkimusaloilta.

Ilmiöitä, joita tässä tutkimuksessa on käsitelty, on tutkittu suhteellisen vähän. Tutkimusta voidaan siksi pitää ainutlaatuisena. Tutkimuksen tulokset ja käytetyt metodit ovat muiden tutkijoiden, asiantuntijoiden ja suuremman yleisön käytettävissä tämän tutkimusraportin ansiosta.

Avainsanat: korkean teknologian markkinat, uusi teknologia yritys, referenssiasiakas

PREFACE

In Espoo, 22nd of June, 2008,

Jari Ruokolainen

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1 INTRODUCTION

1.1 Background of this study

A start-up technology company with a new and complex product often represents a risk for corporate customers. The start-up technology company may find it hard to convince a potential first reference customer to buy a new system product because of the lack of evidence in the form of customer references. In addition, the increasing complexity of the products creates barriers for customers to adopt new technologies (Sheth and Ram, 1987). Furthermore, the high technology market has been reported as being volatile and skeptical (Beard and Easingwood, 1992; Beard, 1995).

Customer references are especially important for companies that produce complex software systems for corporate customers. The importance of the first customer reference can be even more important than product innovativeness. A customer may value a good customer reference more than a low price or advanced technology.

It can be assumed that the first customer reference not only proves the viability of the product, but also the whole business concept including customer support, marketing and other operations of the start-up company. In addition, the business concept and the complex system may improve significantly during the first implementation, which usually takes place through customer projects.

1.2 Research interest

The growth of societies is based partly on the growth of start-up technology companies as they play an important role in providing innovations to society. However, innovation is not straightforward, due to the volatility of the high technology market. Therefore, the overall research focus of this study is on how technology companies can capitalize on market potential, plus it also aims to increase the understanding of this issue.

First customer references play a role in the process of capitalizing on the market potential within a specific business sector. If the first customer reference is of importance for the future success of start-up technology companies, this subject is clearly worth researching.

1.3 Research objective

The objective of this study is to find variables related to the success or failure of using the first customer reference in the start-up technology companies including the investigation of how these variables contribute to the sales growth of these companies.

In order to achieve this objective, the study has the following sub-objectives: (1) to define the research domain, to identify associated concepts and to conduct a literature study of these concepts; (2) to create a descriptive model of the research domain based on the identified concepts; (3) to increase the level of knowledge on the importance of the first customer reference; (4) to create a predictive model of first customer reference usage, with the aid of empirical data; (5) to study by means of a single longitudinal embedded case study, the effect of the iteration of various first-customer-reference-related variables from one customer case to another; and (6) to execute a constructive study on how a customer reference can be used to create marketing materials. Finally, based on knowledge derived from the above research, managerial implications for practitioners are provided. The study has both epistemic and practical objectives. Based on the empirical input of this study, a teaching case is created to support new entrepreneurs (Ruokolainen et al., 2005).

1.4 Scope of this study

First customer references are needed especially for selling and marketing complex systems in the business-to-business market. High technology systems are complex products, requiring a large amount of specialized knowledge. Many of the software systems, in particular human resource management systems, contain such complexity. Systems of this kind are implemented typically through customer projects. Thus, investigating the start-up phases of companies that design and produce complex software systems for corporate customers is the focus of this study.

One business sector in one country has been studied in order to eliminate the effects of additional variables, which could cause problems in the analysis phase. In addition, by keeping the research environment as homogenous as possible yields a clearer picture of the phenomena studied. For the same reason, the potential impact of venture capital financing is planned to be minimized. The target of the companies funded by venture capital financing may be an easy exit instead of market entry. One of the main screening criteria of the investment of venture capital companies is the possibility of high returns facilitated by easy exit (Fried and Hisrich, 1994). This generalization requires that the overview of the results be discussed at the end of the study.

There are several compelling reasons for conducting this study in a Southeast Asian country. Firstly, in a recently industrialized country the venture capital market is less developed. The second reason relates to various different aspects of the use of social capital. This use is expected to be different in a Southeast Asian country, such as Thailand, than in a Western society (Holmes and Tangtongtavy, 1997), and, therefore, this study could yield some useful and interesting research results.

Thailand was selected for this study because of the availability of previous field study material and it is also part of an in-depth academic research program of technology companies in Thailand.

1.5 The Thai economy and industry

Thailand's economy experienced a period of growth in 1985 (Bhongpaichit and Baker, 1998). The resulting increase in local labor costs forced Japanese companies to set up their factories in other countries such as Indonesia, Malaysia and Thailand. Consequently, Japanese companies invested about $US47 billion in Asian countries between 1986 and 1993. The average annual growth in Thailand between 1985 and 1995 was about 9.0 percent (The World Factbook, 2000).

However, in 1996, an economic crisis spread throughout Southeast Asia and the Thai economy was severely affected. The annual growth rate fell to 1.3 percent in 1997 (Thailand Economic Reform, 2000) and the value of the Thai Baht halved. The Thai Baht reached its lowest point of 56 to the US Dollar in January 1998. In July 1997, the Thai Baht was pegged at 25 to the US Dollar. Finally, the International Monetary Fund organized financial assistance for Thailand. According to Wikipedia (2007), recovery from the economic crisis depended heavily on increased exports to the rest of Asia and the United States. By 2002 annual growth was 5.8 percent. In 2006, it was 5.0 percent. In June 2008, the Thai Baht is now begged at 50 Baht to the Euro. The Thai Baht continues to strengthen, and the government is boosting the Thai economy to a growth rate of 6 percent by 2009 (Wikipedia, 2008).

Thai industries have registered increases in production, including computers and electronics, garments and footwear, furniture, wood products, canned food, toys, plastic products, gems and jewellery. High-technology products such as integrated circuits and parts, electrical appliances and vehicles have supported the growth in exports. According to Manuel (2001), in the mid 1990s one of Thailand's biggest exports was computers and computer parts. However, tourism still contributes significantly to the Thai economy with tourist arrivals in 2006 at 14 million, a 20 percent increase from the previous year. In 2002 there were 11 million tourist arrivals. Thailand is a major world exporter in the rice market and approximately 60 percent of Thailand's labor force works in agriculture. Since 2005, the rapid ramp-up in export of automobiles of Japanese manufacturers has assisted in improving the trade balance (Wikipedia, 2007).

According to Thailand ICT indicators 2005 (2005), software industry sales constituted 17 percent of the total value of the country's information technology market, which totaled 103 billion Baht in 2004. Several initiatives have been promoted to develop the software industry in Thailand. Software Park of Thailand has been active in enhancing

the software industry by operating an incubator center which helps young start-up companies to grow during their start-up phase. The Software Industry Promotion Agency, which is a public organization under the Ministry of Information and Communication Technology, has been established to support the development and use of software solutions for the Thai industry. Currently, the offices are located in Chiang Mai, Phuket, Khon Kaen and Bangkok.

A representative of the Thai government agency, Software Park of Thailand, has stated that the major focus of the country's software industry is to support key industry sectors and those which have high growth expectations. Considerable effort has been devoted to developing software products to support, for example, the tourism and telecommunication industries. Especially over the last few years, the rapid increase in the use of the Internet has amplified the need for new software solutions. The Thai government supports the development of the software industry, for example, by giving tax discounts and work permits to foreigners who have the appropriate levels of education and work experience.

According to the Thailand Official Software Directory (1999), there were 300 small and large software development companies in the country in 1998. About 70 percent of them were small, with less than 20 employees. The information technology (IT) market at the time was 5 billion Baht, of which the software market share was 20 percent. It is expected that the number of software companies will have now increased, since the size of the total IT market increased to 25 billion Baht in 2004.

1.6 Choice and justification of the research approaches

Social and economic systems, such as those described in this study, are affected by multiple variables, which can seldom be known or measured as accurately as in the natural sciences. Research on socio-economic phenomena can bring new information to the existing scientific knowledge pool by looking at the subject from fresh angles. This study shares this epistemic view of research.

Conceptual analysis, action analysis, nomothetic and decision-making studies are research approaches commonly used in economic science. The selection of the research approaches can be based on how much is known about the problem prior to the study and on what kind of phenomena are to be studied.

The nomothetic research approach is derived from the positivistic science tradition, in which information is gathered from known and verifiable observations, that is, variables. This approach involves the use of surveys; the collection of data using

questionnaires and the search for correlations using statistical tools. Hypotheses are formulated and verified by means of empirical data and statistical analysis.

Action research approaches are classified as belonging to the hermeneutic science tradition, which aims at gaining a profound understanding of the causalities of complicated phenomena. Typical of the action research approach is the use of the case study method and the multiple case study method. The single longitudinal case study method can also be used to support a nomothetic approach. A survey alone might not provide sufficient evidence to support causality (Olkkonen, 1993). A single longitudinal case study method also takes into account the changes over a longer period, usually several years.

A problem associated with both case studies and multiple case studies relates to the limitations of a generalization of the results, due to the limited number of samples. However, the results of the case studies can still be used effectively to create hypotheses and theories. According to Gummeson (1993), case studies can be used to explore an area that is hardly known. He states that the different case study approaches can be combined. For example, an exploratory case study can be combined with a multiple case study. According to Yin (1989) a case study with multiple cases can be considered more compelling, and by using multiple cases the overall research study is more robust than a single case.

The conceptual analytic research approach aims at developing new conceptual systems, which are needed for analyzing and recognizing the relevant phenomena. The creation of a conceptual system is based on the analysis and synthesis of the related concepts, empirical knowledge of the phenomena and associated theories.

In addition to the decision-making research approach, the constructive research approach aims at developing problem solving techniques. It means solving a problem by constructing models, diagrams, plans etc. It uses heuristic methods and focuses on finding practical solutions to problems. The decision-making research approach uses analytic-deductive methods to obtain the results. Both approaches apply case study methods.

The combined use of several research methods can increase the reliability of results, if the methods do not share the same source of systematic error. Such a research approach, of using several methods in combination, is referred to in the literature as triangulation. Triangulation is recommended for use in the social science by several researchers, including Bryman (2003), Flick (1992) and Denzin (1970). According to Downward and Mearman (2005), triangulation is not commonly applied in economics, although it is a necessary element of the logic of retroduction.

The topic of this study has not been widely studied in the literature, so that the overall nature of this study is more inductive than deductive. In such a situation, a conceptual analysis approach is needed to increase the understanding of the concepts concerning this study's domain. Both single longitudinal case and multiple case study methods are used and supported with statistical analysis in this study. The practical objectives of this study are achieved by means of the constructive research approach. Two independent field sample bases are employed to study the investigated phenomenon. The secondary sample base is used to assess the results derived from the primary sample base.

1.7 Overview of the study

This study is based on four empirical sub-studies, one conceptual sub-study and one triangulation sub-study of three previous empirical sub-studies.[1] The research process of this study is illustrated in Figure 1.

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[1] The results of the sub-studies have been published in the following articles in peer reviewed *journals*:

Ruokolainen, J., (2008). How to build the first customer reference to support the growth of a start-up software technology company: an iterative market entry through several sequential customer cases, European Journal of Innovation Management, 11(2), 282-305.

Ruokolainen, J. and Mäkelä, M., (2007). Constructing a market domain model for start-up technology companies: a case example from software business, Journal of Engineering and Technology Management, 24(3), 186-202.

Ruokolainen, J., (2005). Gear-up your software start-up company by the first reference customer – nomothetic research study in the Thai Software Industry, Technovation, 25(2), 135-144.

Ruokolainen, J. and Igel, B., (2004). The factors of making the first successful customer reference to leverage the business of a start-up software company-multiple case study in the Thai Software Industry, Technovation, 24(9), 673-681.

The results of the sub-studies have also been published in the proceedings of the following peer reviewed *conferences*:

Ruokolainen, J., (2007a). How to build the first customer reference to support the growth of a start-up software technology company: an iterative market entry through several sequential customer cases, competitive paper, In: 23rd Annual Industrial Marketing and Purchasing Conference, Manchester Business School, 29th of August - 1st of September, Manchester, United Kingdom, peer reviewed conference.

The results of the sub-studies are presented in the following chapters: the concepts, related literature and domain model are presented in Chapter 2; the information collection methods and analyses methods in Chapter 3; the results and their implications are reported in Chapter 4; Chapter 5 includes a constructive sub-study for creating marketing material; and Chapter 6 contains the conclusions and discussion.

Ruokolainen, J., (2007b). The qualitative use of a customer reference in marketing in start-up technology companies – a constructive study, In: 2nd International Conference on Business Market Management, Delft University of Technology, Delft, Netherlands, 25th – 27th of February, peer reviewed conference.

Ruokolainen, J. and Mäkelä, M., (2006). Employing the first customer reference to support the marketing of software products: An analysis based on quantitative and qualitative evidence, competitive paper, In: 22nd Annual Industrial Marketing and Purchasing Conference, University Bocconi, 7th - 9th of September, Milan, Italy, peer reviewed conference.

Ruokolainen, J. and Mäkelä, M., (2005). How to build the first customer reference to support the growth of a start-up software technology company: A longitudinal case study in the business-to-business market in Thailand, work-in-progress paper, In: 2nd Industrial Marketing and Purchasing Asia Conference, Phuket, Thailand, 11th - 14th of December, peer reviewed conference.

Ruokolainen, J., (2005). Key concepts for building customer references - creation of a domain model for start-up technology companies, competitive paper, In: 21st Annual Industrial Marketing and Purchasing Conference, Erasmus University, 1st - 3rd of September, Rotterdam, Netherlands, peer reviewed conference.

Ruokolainen, J., (2003). The usage of the first customer reference for starting the complex software business – lessons learned in the Thai Software Industry, work-in-progress paper, In: 19th Annual Industrial Marketing and Purchasing Conference, University of Lugano, 4th – 6th of September, Lugano, Switzerland, peer reviewed conference.

In addition, the work has been published in the form of *a teaching case* by:

Ruokolainen, J., Kauranen, I. and Igel, B., (2005). T.J.S. Consultants' first customer references – a teaching case for IT firms entering business, (includes teaching case and teaching notes), Management Case Study Journal 5(2), 51-68

Constructive
sub-study
(Chapter 5)

Secondary
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Assess of the results
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Inductive multiple
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4.2.3&4.3)

Base

Primary sample
(Chapter 4.1-4.2)

Statistical analyses
(Chapter 4.1&4.5)

Triangulation of
the sub-studies
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Single
longitudinal
case sub-study
(Chapter 2.2.1&4.2.4)

Conceptual sub-study
(Chapter 2)
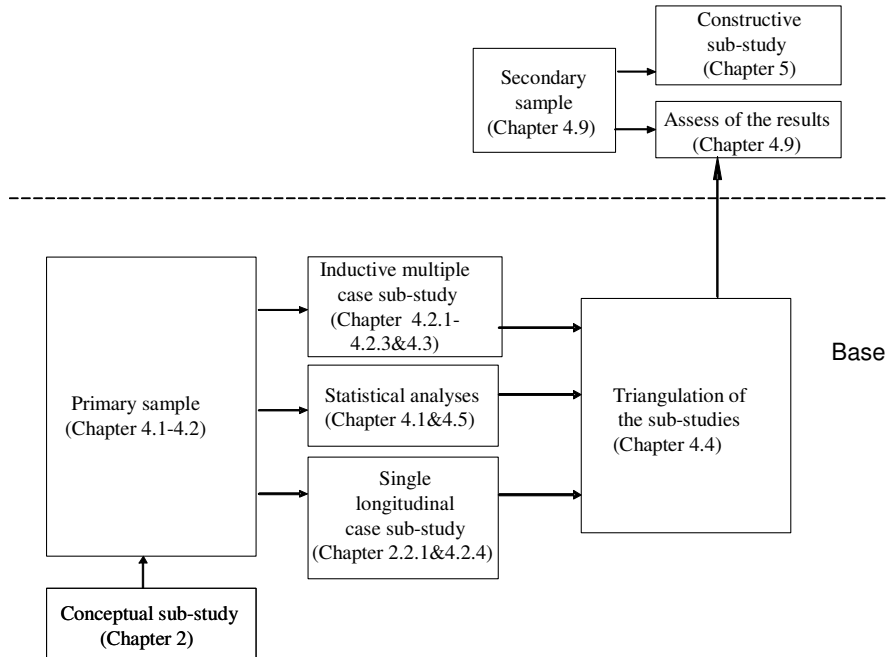
Figure 1: The research process of this study

2 CONCEPTUAL SUB-STUDY BASED ON LITERATURE REVIEW

Customer reference is a well-known concept of marketing practitioners, but the area of customer references has received only relatively little attention in academic research (Salminen, 1997; Möller and Salminen, 2004). In general, the commercialization and launch stages are often neglected in the literature on new product development, innovation, and high technology marketing (Beard and Easingwood, 1996). It also seems that technology entrepreneurs' business experience and personality have attracted more attention in venture capital research than issues associated with the product and the market (Bank of England, 2001). The importance of a first customer reference has been studied scantly. For example, according to Gomez-Arias and Montermoso (2007), "the existing literature is, with few exceptions (Brockhoff, 2003, Ruokolainen and Igel, 2004; Ruokolainen, 2005), of little help". Despite various efforts in the area, the concepts of the problem domain of a first customer reference have received comparatively scarce attention in the area of high technology marketing. This gap in the conceptual sub-study is what this chapter attempts to fill.

2.1 Method

To complement the current discussion in scholarly literature, a method is needed for identifying relevant and missing concepts. The method should provide an innovative, if only illustrative by its powers, angle to the topic of this study and should be helpful in constructing a deeper body of knowledge for the area of customer referral management. Focusing on describing concepts and constructing the domain model is a means of approaching the ontology of the problem domain of this study. Ontology is referred here to the computer science term, which is derived from the same origin as the philosophical term. In computer science use, the term ontology refers to a set of representational expressions that characterize concepts within a domain and the relationships between these concepts. Gruber (1995) defines ontology in knowledge engineering, as an explicit specification of conceptualization, stating that what "exists" is that which can be represented.

In the process of engineering requirements for large-scale information systems (e.g. Loucopoulos and Karakostas, 1995), various presentations that map key concepts and their relationships are proposed, such as state transition diagrams, dataflow diagrams, and domain models. Producing these can bring a better understanding of the problem domain. Domain analysis and modeling are used for producing models that include concepts of that specific problem domain in the form of classes, attributes, and relations. The approach of the domain modeling technique bears some resemblance to the

grounded theory approach as presented by Glaser and Strauss (1967). For instance, one of the ideas in the grounded theory approach is to study field notes and discover categories, concepts and properties as well as their interrelationships.

Domain models can be constructed using various kinds of presentation diagrams. Gen Voca (Batory et al., 1992) is an object-oriented method for hierarchical domain analysis and modeling. Unified Modeling Language (Rumbaugh and Booch, 1995) uses class diagrams for describing problem domains. In its simplest form, a domain model introduces just the vocabulary of the problem area at hand. In the conceptual sub-study, the combination of verbal descriptions and Unified Modeling Language's class diagrams are used.

Building a domain model is discussed by Sommerville (2004) and Pressman (2004). In their view, a problem domain includes real-world things and concepts concerning the problem that the system is being designed to solve. The building blocks for a domain model are identified here with the help of an example case consisting of a story that relates to the problem domain. Candidates for concepts are tangible real-world things that can be conceptualized. Those concepts and real-world things that are redundant, vague, or represent meta-language or describe operations and do not belong to the research domain should not be considered.

2.2 Concept identification of the problem domain

In this section, the items of the present problem domain are identified with the help of an example case, which was studied by a group of researchers including the present author, and which is documented in a teaching case report (Ruokolainen *et al.,* 2005). The candidates for concepts have been italicized. The candidates' links to the literature are identified.

2.2.1 An example case study: Building the first customer reference

This case study is on a Thai company. The *entrepreneur* of this *start-up software company* received her *degree*, a Ph.D. degree, in mechanical engineering, from a US university. Before setting up her own start-up software company, she had gained *work experience* in *software development* in an oil refinery business.

The *first reference customer* of the start-up software company was *one of the largest pig farms* in Thailand, owned by the *entrepreneur's good friend* with whom the entrepreneur had often been in contact since school. This friend and customer had *contacts with major players* in the pig rearing industry. From the entrepreneur's point of

view, the case was a good *business opportunity* to develop a *software product* for managing pig farms and for devising feeding plans for pigs.

The idea of the software package was conceived and further developed together with the first reference customer. The focus of this *joint development* was on determining the specifications and figuring out the business logic for a pig feeding system and implementing it. The first reference customer was willing to act as a test site, thus, helping to test the functionality of the new software. The entrepreneur contacted a professor at a local university to obtain a better understanding of *optimal feeding plans*. The software product was finalized with contributions from all of the parties involved, without considering the ownership of *intellectual property rights*. The entrepreneur considered that her team had gained much *experience on how to build software systems*.

The software company and the local university together arranged *a seminar and an exhibition* for pig farmers to introduce the opportunities offered by the *new technologies*. In the seminar the new software product and the first reference *customer's experiences* of the new system were presented to the pig rearing industry as a success case. The price set for the product was considered modest by these *next potential customers*. All of the development costs of the software product were financed by the software company itself.

It transpired that merely large pig farms wanted to use the software product offered by the case company. Small and medium-sized farms preferred to use software products distributed free of charge by *medical companies*. Medical companies delivered software products to farms to support their sales and to make pig farmers dependent on them. However, large pig farms *did not want to become overly dependent on one medical supplier*. Therefore, they were interested in using software products provided by an independent software company. Taking into account the modest pricing of the new software package and the small number of large pig farms in Thailand, it was clear that the anticipated business would not be profitable.

As the home market could not generate a large enough revenue stream, the case software company attempted to export its product to a neighboring country. An agent, a local software company, was brought in to help in this endeavor. After some software licenses had been sold, the agent disappeared. Many efforts were made to contact the company, but failed.

Although the software product was developed successfully, the attempts to earn money from selling software to pig farms ended in failure. Afterwards, the entrepreneur felt that the work done at that time was valuable although the market entrance failed: during this initial business stage the entrepreneur and her team gained *valuable experience in marketing*.

2.2.2 Concept identifications with help of case example

Based on the description of the example case, a list of candidate concepts is identified in Table 1. Each of the identified concept candidates represents a concept or an instance of a concept, for example, a medical company is an instance of the concept of competitor, to be included in the present problem domain model.

Table 1: Concepts' identifications

Candidate for concepts	Concepts in the current problem domain
An entrepreneur	A technology entrepreneur
A start-up software company	A start-up technology company
Ph.D., work experience	An entrepreneur's background
A first customer reference	A first customer reference (new concept)
One of the largest pig farms	A first reference customer (new concept)
Entrepreneur's good friend, contacts to major players	Social capital
Business opportunity	Business opportunity
A software product	A technology product
Optimum feeding plan	Sales argument
Joint development with a customer	R&D collaboration with a customer
Intellectual Property Rights	Intellectual Property Rights
Introducing new technologies in a seminar or exhibition	Entering high technology market
A medical company	A competitor
Next potential customer	Next potential customer
Customers' experience	A reference business case (new concept)
Did not want to become too dependent on one medical supplier	[Customer's] business case
Experience on how to build software system	Experimental firm-based knowledge
Experience in marketing	Experimental market knowledge

Even though many research studies support the discussion here and have been carried out previously, there is a lack of research in this particular area of customer referral management. A customer reference is assumed to reduce the risk perceived to be present in a new venture (Bauer, 1967; Hutt and Speh, 1992), to increase the suppliers' credibility (Blomqvist, 1997; Levitt, 1967) and to increase the supplier's reputation (Herbig and Milewicz, 1993; Doney and Cannon, 1997). Thus references are expected to help start-up technology companies enter markets.

Start-up technology companies have been widely studied in the literature by several authors (for instance, Autio, 1995a; Yli-Renko, 1999; Freel, 1998; Huang and Brown, 1999). Other authors (for instance, Freeser and Willard, 1990; Hannan and Freeman, 1989; Maes, 2001) have discussed the effect of the personal background of the entrepreneur on business success. Characteristics of the technology market, including entering the market, have been described by Moriarty and Kosnik (1989), Beard and Easingwood (1996), Shanklin and Ryans (1987), and Sheth and Ram (1987).

The example case includes several thoughts on how the entrepreneur's *social capital* was used or was planned to be used: The first reference customer was found from the entrepreneur's old friend's company. The old friend's relationship to the industry was believed to assist the start-up technology company in entering the market. Aspects of social capital have been discussed by, for instance, Granovetter (1973), Aldrich and Zimmer (1986), Nahapiet and Ghoshal (1998), Otsgaard and Birley (1994), Eisenhardt and Schoonhoven (1996), and Nahapiet and Ghoshal (1998), Adler and Kwon (2002) and Anderson el al. (2007).

The example case company developed the first product jointly with the customer. Collaboration with a customer in product development has been discussed especially in the lead user methodology (Herstatt and von Hippel, 1992, Urban and von Hippel, 1988). The business logic, specification and sales arguments can be one of the outcomes of the customer collaboration.

A company's entry to foreign markets, as studied by Johanson and Vahlne (1977), emphasizes the importance of experimental knowledge in gaining market and firm-based knowledge. Their research results can, with some limitations, be applied to start-up companies' entry to the market. In both cases the companies and their products can be assumed to be unknown by the market. Therefore Johanson's and Vahle's (1977) Uppsala Model is considered in this study.

Some of the concepts found in the example case are not discussed here, for example, collaboration with a partner – the professor at the local university – because the scope of the conceptual sub-study has been limited to the supplier's interface towards its customer.

2.3 Concepts' descriptions

2.3.1   Customer reference

As noted above, *customer reference* is a well-known concept in practice in industrial marketing, but has received only scant attention in the literature. Salminen's (1997) description of the reference is as follows: "A reference is the supplier's relationship to its existing / former customer that might be evaluated by that customer in terms of the supplier's product / service, management, and cooperation performance." This statement is similar to descriptions of reference used for people in the labor market: "A reference is a formal recommendation by a former employer to a potential future employer describing the person's qualifications and dependability" (Wordnet, 2004).

A reformulation of Salminen's proposal for the definition of the reference concept is suggested, because Salminen's definition combines two entities that should be better kept separate: the relationship to the current or former customer and the performance of the supplier's product or service. The former can tell something about the latter but in other cases it also tells nothing about the latter. The reason for site visits is that a potential customer can verify the reference in person, and not just be dependent on recommendations coming from the supplier or reference customer.

Ahmed (1993) mentions the reference in the context of reducing purchase uncertainty. He states that projects executed by the supplier are deemed to be as similar in nature as possible to the current project. His idea for a customer reference is based on the perception of past events building the credibility of the success of future events, if a reference case is similar to a current case. One of the problems in using the customer reference is that it can take a long time before sufficient experience has been gathered. Salminen (1997) quotes two years as a sufficient period.

The concepts of credibility, perceived risk and reputation are well known in the literature, and can be related to building the first customer reference. These are briefly introduced here.

Blomqvist (1997) defines credibility as: "The actor's perceived ability to perform something he claims being able to do on request." This definition includes the aptitude of the actor to "keep his or her word", which can be one of the elements in building trust with a customer. Levitt's (1967) statement supports the assumption that credibility is one of the key purchasing decision criteria: "When it comes to the most important and most risky of customer actions – actually deciding to buy or to reject a new product – assuming the various suppliers' products to be equal in all respects, source credibility exerts a dominant influence over the other considerations." Especially in high technology and in complex business life, credibility is needed to convince the corporate customer of the viability of the offering. Credibility in this study refers to the likelihood of customers believing claims put forth by a start-up technology company. A customer reference is an important method for proving a claim in this setting.

The concepts of credibility and perceived risk represent the opposite sides of the same phenomenon. A definition of perceived risk, introduced by Bauer (1967), refers to the extent to which a customer is uncertain about the consequences of an action. Purchase decisions are an important issue in which uncertainty needs to be tackled. According to Hutt and Speh (1992), perceived risk has two components: the outcome of the decision and the magnitude of the consequences if the wrong decision is made. It can be assumed that a sellers' credibility reduces a buyers' perceived risk if the seller is capable of keeping their word.

Herbig and Milewicz (1993) define reputation as an entity's willingness and ability to repeatedly perform an activity in a similar fashion. Doney and Cannon (1997) define good reputation of a supplier as honesty and concern towards its customers. Reputation and credibility probably go hand in hand to some extent: if the company has a good reputation, it also has credibility and vice versa. The question that remains is whether the first customer reference increases the good reputation of the start-up company. The intuitive answer is yes, but, as noted by Herbig and Milewicz (1993), building a good reputation needs more evidence.

In this study the concept of credibility is mainly used as one of the preferable outcomes of a successful first customer reference. It is assumed that an increase in credibility decreases the buyer's perceived risk. The concept of reputation is not assumed to be one of the outcomes of the first customer reference, although some increase in good reputation by virtue of a positive first customer reference is possible. It is expected that success in building several victorious customer references will result in a significant increase in the level of good reputation.

2.3.2 High technology market

Newcomers often find the high technology market challenging despite attractive business opportunities. This market is characterized as a skeptical, uncertain and labile environment of high-velocity changes (see, for instance, Moriarty and Kosnik, 1989; Beard and Easingwood, 1996). In addition, buyers also tend to cancel and postpone deliveries. There is also a high risk of obsolescence of the products (Shanklin and Ryans, 1987). Moreover, the increasing complexity of the products creates barriers for customers to adopt new technologies (Sheth and Ram, 1987).

It has been demonstrated that the whole business concept including customer management and product support creates a robust base for business success in high technology markets (Shaw *et al*, 1989). Furthermore, selling a business concept to customers, instead of just selling the product, leads to a situation where relationships on multiple levels are needed to ensure effective communication. Such extensive communication between buyers and sellers has been called a multi-headed customer and seller concept (Gummesson, 1987).

High technology markets are especially difficult for start-up technology companies that deliver complex products to corporate customers but have no customer reference to dispel the uncertainty related to their credibility. The dilemma for such a start-up company is to convince the potential first reference customer to purchase a product, although the start-up company has not been able to test the product in reality. This is one

of the main problems that make it difficult for such start-up technology companies to enter the market.

2.3.3 Partnership theory – buyer's perspective

In the past, competition and an inflexible approach were believed to provide the best price, delivery and quality terms (Spekman, 1988). *Partnership theory* emphasizes the importance of long-term cooperation, an open and honest relationship and mutual commitment in order to gain sustainable benefits (Keough, 1993; Spekman, 1988; Asmus and Griffin, 1993). Long-term, intensive cooperative arrangements lead to a situation in which it would be difficult for a new player to intervene. Opportunities usually open up in a discontinuity of current technology or business relationships. Thus, start-up companies usually have to offer customers new ideas and innovations.

Partnership theory also emphasizes the importance of building a "win-win" situation. This approach contradicts traditional purchasing practices which rely on using competition to knock down prices and to gain better delivery terms (Spekman, 1988). In "reference businesses", such "win-win" situations can be achieved, for example, in a situation in which the customer has the opportunity to get something from a supplier that does not yet exist on the market. On the other hand, the supplier gets positive arguments to be employed in entering the market.

Start-up companies often do not have the resources needed to take care of big customers, such as large companies with a centralized purchasing function. It might be useful for start-up companies to use small and medium sized companies as the first reference customer. In addition, the decision process in small companies is often more straightforward than in large enterprises.

2.3.4 A start-up technology company

A report from the Bank of England (2001) defines the characteristics of technology-based small firms as follows: "Their success is linked to difficult-to-value growth potential derived from scientific knowledge and intellectual property; they lack tangible assets in the early stages of their life cycles which may be used as collateral; and their products have little or no track record, are largely untested in markets, and are usually subject to high obsolescence rates."

Autio (1995b) and Yli-Renko (1999) studied new technology-based firms and the latter, in her empirical sample, includes in her analyses those firms, which fulfilled the following criteria: "(1) they are not more than ten years old, (2) are independent, that is, not subsidiaries of other companies, and (3) base their business on exploiting their

technology resources, that is, are active in developing, manufacturing, or commercializing technology." Autio emphasizes that the founder or founders of new, technology-based firms should have been affiliated with the source of technology before establishing the company. The source of technology can be, for instance, a university or research laboratory. Such a strong connection to the research community and the expectations of one's own research prior to the establishment of one's own company limit the number of the start-up technology companies to just a few. In this study, however, it is not assumed that entrepreneurs necessarily have a background in research.

The *New Oxford Dictionary* (2001) defines the concept of start-up as: "The action or process of setting something in motion" and "a newly established business". Accordingly, a start-up technology company means a newly established company that focuses on technology and aims at entering the market with technology-based products. This study assumes that start-up technology companies have the following characteristics: The capabilities of start-up technology companies and their products are largely untested in the markets and these companies are assumed to be mainly entrepreneur-driven; they design, implement, or maintain complex, high technology products; entrepreneurs of these companies often have at least a college education; start-up software companies are a subset of start-up technology companies; and finally it can be assumed that start-up technology companies need customer references.

2.3.5 Entrepreneurship

Wikipedia (2006) writes that an entrepreneur is one who undertakes and operates a new enterprise or venture and assumes some accountability for the inherent risks. Most commonly, the term entrepreneur applies to someone who establishes a new entity to offer a new or existing product or service into a new or existing market, whether for a profit or non-profit outcome. Business entrepreneurs often have strong beliefs about a market opportunity and are willing to accept a high level of personal, professional or financial risk to pursue that opportunity. *The New Oxford Dictionary* (2001) defines an entrepreneur as someone who sets up a business by taking a financial risk that is greater than normal.

According to the literature, the main investment criteria used by venture capitalists relate to business experience and personal characteristics of the entrepreneur (Bank of England, 2001). Freeser and Willard (1990) state that market opportunities often occur too rapidly for those that do not possess prior knowledge of the business sector. In addition, entrepreneurs with a higher education are assumed to be more competent in creating conducive relationships with the customers and stakeholders (Hannan and Freeman, 1989). However, for example, Maes (2001) found no correlation between the

education attainment of the entrepreneurs and financial performance of small construction companies.

According to the report by the Bank of England (2001), the more recent studies contradict the traditional investment criteria commonly used by venture capitalists. The newer studies propose that industry and market factors have more effect on success than the entrepreneur and his or her team. However, the report makes note of the limited number of similar studies and the small sample sizes used therein.

Entrepreneurship research also shows that entrepreneurs of start-up technology companies tend to concentrate on solving technological problems at the expense of commercialization (Freel, 1998). On the one hand, the personal characteristics of the entrepreneurs affect the success of start-up companies; on the other hand, it can be assumed that the work experience and education influence the characteristics of the entrepreneurs.

Autio (1995a) wrote that empirical studies suggest that rapid organic growth is both rare and often even unwanted among new, technology-based companies. Representative of this thinking is a Thai software technology entrepreneur who stated that the profit is a bonus from satisfied customers.

Not all start-up technology companies take the necessary actions in marketing their new products. In Huang and Brown's (1999) view, more than 40 percent of start-up companies have problems with marketing. The reason underlying this may be that the high technology market is difficult to access as described earlier by several authors (Beard and Easingwood, 1992; Beard, 1995). This, together with the fact that many entrepreneurs have no education in marketing, may create the phenomenon which appears as the entrepreneurs' unwillingness to execute activities relating to commercialization as described by Autio (1995a) and Freel (1998). A remedy is to increase the marketing and sales knowledge of start-up companies.

2.3.6 Social capital

Putnam (1995) defined social capital as "features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit". Bourdieu's and Wacquant's (1992) definition of social capital also includes a time element, not mentioned in the previous definition. They state that social capital works only in the networks in which relationships are permanent. Their definition is: "The sum of the resources, actual or virtual, that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalized relationships of

mutual acquaintance and recognition." In Nahapiet and Ghoshal's (1998) wording, social capital refers to resources that are created by contacts between actors.

The definition of mutual benefit is problematic in the context of small companies: what is the mutual benefit when the purchaser decides to buy products or services from a start-up technology company whose credibility is questionable or nonexistent? Between two or more individuals, the mutual benefit includes the assumption of counter services, which can exceed the scope of business ethics. On the other hand, friendship or sharing the same visions can form the basis for mutual benefit. Tsai and Ghoshal (1998) clearly state that there is a strong correlation between trustworthiness and shared visions.

Social capital – referring to past and present contacts and a network of contacts – can be assumed to support finding customers. In the context of this study the social capital refers to those resources created by contacts between actors that are useful for start-ups in the process of selling products. It also assumes that those who have a relationship with a customer may have a better chance of succeeding in entering the market. Several studies have shown the key role of social capital in setting up a start-up company (Aldrich and Zimmer, 1986; Otsgaard and Birley, 1994). Start-up technology companies can use the existing contacts of the owners to find customers or obtain venture capital (Birley, 1995; Eisenhardt and Schoonhoven, 1996). However, the need for social capital along with the innovation process is unclear: what is the role of social capital after gaining a first customer reference or after several references?

2.3.7 Lead user design methodology

There are different opinions in the literature about the benefit of the lead customer in the research and development process. The lead user methodology of the involvement of the key customers in the research and development process has been reported to positively affect the success of product design (Herstatt and von Hippel, 1992, Urban and von Hippel, 1988). However, some of the studies do not support this, with the customer's involvement being criticized as limiting the research and innovative development (Bidault and Cummings, 1994; Johne, 1994). This is because the customers' proposals are often improvements to existing products rather than radical changes. In addition, the strong involvement of the customer can also lead to a situation where the start-up company ends up in the role of subcontractor – instead of developing the new product for a large market.

Problems with Intellectual Property Rights have been reported where a start-up company intensely engages its customers in the product development process (Bruce *et al,* 1995): customers, in some cases, have not recognized that the Intellectual Property Rights of the start-up technology company are built-in to the product and may claim to own these

rights themselves. This can, in the worst cases, lead to the bankruptcy of the start-up company.

2.3.8 Start-up technology companies' entry into market

The companies' expansion into a foreign market can be regarded as similar to the start-up technology companies' entry into a local market. In both cases the markets are often new and unknown to the companies. Typically the companies neither have the reputation nor credibility required by the new markets. However, companies planning to expand into foreign markets usually have the knowledge and experience of taking their product into the local market. On the other hand, start-up technology companies have neither foreign nor local market knowledge and/or experience.

The model created by Johanson and Vahlne (1977) describes the companies' entry into a foreign market as having four elements: market knowledge, market commitment, commitment decision and current activities. According to the authors, the decisions to commit are reactions to opportunities and problems detected by the current activities. The experience supporting the current activities can be divided into two types: market-based experience and firm-based experience. Both are needed in order to make the right decisions.

Firm-based experience can only be gained through the operations of that firm; an experience start-up technology companies do not have. Market knowledge can be attained by recruiting personnel who have it. However, Leonidoy and Katsikeas (1996) argued that market information can be accessed neither easily nor inexpensively. In practice, the entrepreneurs' own social capital is the means to gain the first customer reference. With the help of the first customer reference more market knowledge can be acquired if the focus of the start-up technology company is, for example, on finding and testing sales arguments.

Johanson and Vahlne (1977) explain that market commitment is composed of allocated resources and the degree of commitment of those resources which in turn is related to how specific the resources are for the market. The commitment of resources can also be considered as an investment in a specific market. Start-up technology companies often do not possess as many resources as companies that plan on expanding their operation abroad. These companies often are already well past their start-up phase.

According to Johanson and Vahlne (1977) one of the main obstacles for internationalization is the lack of knowledge. They categorize knowledge into two classes, namely objective knowledge, which can be gained through education, and experimental knowledge, which is learnt through personal experience. Over time

companies can reduce the level of uncertainty and gain business opportunities by increasing experience and learning more. In addition, Johanson and Vahnle state (1977) that a good way to gain practical knowledge is to set-up business operations abroad.

A first customer reference can be regarded as one instance of setting-up business operations. In many cases, a first customer reference can provide the practical knowledge of the market in question. The start-up technology companies also learn experimental knowledge with the help of the first customer reference, and they can gain further business opportunities by using the first customer reference in marketing. This can be interpreted to mean that the first customer reference can have a remarkable role in entering the market. Start-up technology companies producing complex products for the business-to-business market can, in particular, benefit from the first customer reference.

2.3.9 New concepts

Current concepts of building the first customer reference are vague and inadequate. For example, one of the problems with current reference definitions is that they include various topics that can be recommended to the next potential customer, such as product or service performance, reliability, earned savings and so forth. From such lists, it is difficult to grasp information concerning what could be essential for potential customers. New or complementary definitions are needed. Thus, the following concepts are proposed for use, although they have not been defined in the literature in the context of the present problem domain:

- customer reference
- reference customer
- first customer reference
- first reference customer
- next potential customer
- reference business case
- reference business.

In *reference businesses*, typically complex, high technology and complex products or services for corporate customers in the business-to-business market are sold. Credibility is an important factor in sales success. Customer references are needed in order to prove credibility.

The concept of a business case is described as follows: "A business case consists of information that describes the justification for setting up and continuing a project or procurement. It provides the reasons for the expenditure and is updated at key points

during the project or procurement process" (ITIL People, 2005). Another definition states: "A business case is a justification of why the project is required for the business and what the product is going to be. It should include an outline of the Return on Investment (ROI), or a Cost/Benefit Analysis (C/BA) for the project, the project's product and performance characteristics, major project risks and the upside opportunities. The project's sponsor is responsible for developing the business case" (Project Auditors, 2005).

The new concept of the *reference business case* can be defined as follows: "A reference business case comprises those verified sales arguments that are assumed to match the supplier's next potential customers' business case." A reference business case can consist of sales arguments relating to return of investment or cost and benefit analysis.

A *next potential customer* may be interested in the start-up technology company's product. In order to assess and build the business case for using the supplier's product, the next potential customer needs the business case of the customer references, which can be compared to the next potential customer's own business case. The business case of the next potential customer may include an interest in obtaining control of the start-up technology company's Intellectual Property Rights.

A proposal for the definition of the *customer reference* is as follows: "A customer reference consists of a supplier's commercial product or service and the reference business case of the product or service." A good customer reference illustrates the attractiveness of its reference business case to the next potential customers. The relationship with the *reference customer*, which provides the *customer reference*, can either hinder or promote the use of the customer reference for marketing purposes. The *reference customer,* which is typically a company, is a commercial user of the supplier's product or service.

In this study, the *first customer reference* consists of the start-up technology company's first commercial product, which typically is innovative, complex and represents high technology, and the related business case. First customer references are provided by the *first reference customer*, which is the first commercial user of the product or service.

2.4   The domain model for the present problem domain

A domain model for the reference business, which integrates the relevant concepts, is presented in Figure 2. The integration can be described by explaining the processes related to the domain model. Two different viewpoints are presented in the processes, namely the market entry of the start-up technology company and the buyers' decision in making the purchase.

A box in the domain model (Figure 2) represents a concept, a class that interacts with other classes. A concept can be another concept's attribute. For example, the entrepreneur's background can be considered as a concept, although it is an attribute to a technology entrepreneur. A class can refer to one or more instances of another class. For example, a start-up technology company can compete against none or more competitors (see lines with numbers in Figure 2). A class can also inherit attributes of another class (see lines without numbers in Figure 2). For example, the attributes of the technology market are expected to be built into the next potential customers' behavior. In other words, customers inherit the attributes of technology markets in the model. The attributes of the start-up technology companies are also affected by the entrepreneurs' attributes. The numbers along the lines indicate the numbers of actors of the classes that are involved in the relationship which is depicted by the line.

The process for entering the market can be described briefly as follows: The start-up technology company needs a customer reference for its product, which typically is innovative, complex and represents high technology. Lacking credibility, the start-up company needs to use its entrepreneur's social capital to find the first reference customer. After obtaining the customer, the product must be implemented. The first reference customer might have an interest in obtaining control of the Intellectual Property Rights of the product if, for example, the costs of the development and implementation are not shared between it and the start-up technology company, but paid by the reference customer. It is proposed that the focus of the start-up technology company is on collecting sales arguments for the reference business case which the potential customers' can compare their business cases to.

The corresponding process, which is the interest in buying a product from a supplier, (a start-up technology company), can be described according to the domain model as follows: the next potential customer is interested in the product proposed by the start-up technology company. In order to verify the purchasing decision the potential customer needs to know about the business case of the customer reference. The business case is usually validated by the reference customer's statements.

Technology Entrepreneur
- background
- social capital
- tendency to ignore commercial aspects
- rapid organic growth unwanted

Start-Up Technology Company
- small company
- technology oriented
- entrepreneur driven
- scant market knowledge
- lack of credibility
- needs customer reference
- lack of tangible assets
- scant firm-based knowledge

Intellectual Property Rights

Technology Product
- complex
- high technology
- innovative
- largely untested in markets

First Customer Reference
- successful or failed
- gaining lasting experience
- problems with new products
- source of experimental knowledge

Reference Business Case
- sales arguments
- gained experience
- achieved benefits
- gained ROI
- realized risks

First Reference Customer
- corporation
- business sector
- size of corporation
- might use supplier as subcontractor
- big customers can be hard to deal with
- might want to own IPRs

Business Case
- budget for investment
- expected ROI
- expected improvements
- skills needed
- potential risks

Competitors
- market segment
- share of market

Reference Business, Technology Market
- skeptical, labile, fast moving
- importance of credibility
- high business opportunities
- hard to intervene in existing relationships
- high obsolescence of products
- market knowledge not easily available

Next Potential Customer
- business sector
- corporation

owns 1

develops 1

gives credibility and experimental knowledge 1

relates to 0..* 0..*

verifies or determines specifications and business logic of 1..*

1 1 1..* 1..*

includes 1

is compared with 0..1 1

are interested in 1..*

provides 1

provides evidence and experience 1

has 0..* 1

competes against 0..* 1

contacts to 1 1

has marketing and sales activities 0..* 0..* 1

1 1

Figure 2: The domain model for the reference business

2.5 Early factors

Being comparatively sparse, the existing literature does not provide a strong base for conducting only nomothetic research into this subject. Therefore, in this study the inductive multiple case research approach is employed, supported with complementary data collection and analyses methods.

Some early factors (Eisenhardt, 1989) can nevertheless be identified in this phase. Their identification can be derived from the domain and literature analysis executed in this chapter. Early factors are:

(1)   The skills of the entrepreneur: For example, according to the Bank of England's report (2001), entrepreneurship research suggests that the personal characteristics of entrepreneurs play an important role in supporting or preventing the successful market entry of start-up technology companies. The characteristics of the entrepreneur can be related to his or her background including both educational attainment and work experience. Educational attainment can be assumed to refer to the concept of objective knowledge, which is used in the Uppsala Model (Johanson and Vahlne, 1977).

(1)   Social capital: Anderson et al. (2007) write that the understanding of the processes to recognize or exploit social capital is fairly limited. The Uppsala Model (Johanson and Vahlne, 1977) highlights the importance of contacts with potential customers: "Market-specific knowledge is knowledge about the characteristics of a specific national market, its business climate, cultural patterns, structure of the market system, and, most importantly characteristics of the individual customer firms and their personnel." Cova et al (1996) even state that companies selling capital investment projects tend to see their business as a milieu in which business and non-business actors are intertwined. Social capital is likely to play an important role and more detailed research into its role is warranted.

(2)   Customer's commitment: The Uppsala Model (Johanson and Vahlne, 1977) proposes the importance of the supplier's commitment to the market. On the other hand, research concerning the lead user design methodology (Herstatt and von Hippel, 1992; Urban and von Hippel, 1988) and partnership theory (Keough, 1993; Spekman, 1988; Asmus and Griffin, 1993) emphasize the customer's commitment to the business of its partner. More research is needed to obtain a better understanding of this subject in this study context.

(3) Experimental knowledge developed from the first customer reference: The importance of gaining experimental knowledge through operations is emphasized by the Uppsala Model (Johanson and Vahlne, 1977). The operation can mean start-up technology companies' activities with the first customer references.

(4) Marketing value of the first reference customer: Beard and Easingwood (1996) recommend that big customers should be used as a reference. The reason is that bigger companies, rather than smaller ones, are more valuable in marketing. In addition, other customer characteristics, which make the customer valuable from the marketing perspective, should be investigated.

3 DATA AND METHODS

3.1 Sample selection

The primary sample companies for the inductive multiple case sub-study, the survey sub-study and the single longitudinal case sub-study were selected with the help of Software Park of Thailand, a Thai government organization, which aims to promote the Thai software industry. It maintains a database of Thai software companies for different interest groups, such as the Thai government and foreign and local investors. In 1999 the database contained more than 200 companies.

The target population of this study consists of Thai companies that produce complex software systems for the business-to-business market. The construction of such systems could take several years. All the software companies, which could be matched with the criteria described above, were selected to form the primary sample base. The primary sample base represents a large portion of the total population based on checking all the companies in the database: it was difficult to find additional sample companies which would have matched the criteria.

The size of the primary sample base for the sub-studies consists of more than thirty companies. Several companies were interviewed more than once. In this study, it is assumed that the statistical tools, which are based on random deviation, can be employed.

All the software companies studied were entrepreneurial in their start-up phase. The first four years of these companies were investigated and the data was collected for that period. The interviews seldom concentrated on the current situation. All the companies had existed for several years at the time of the interviews and therefore had succeeded in entering the market. Two of the companies later terminated their operations during the time of writing this research report.

The success of the start-up companies can be measured in several ways, for example by sales growth or the amount of profit. In this study, the main use of the first customer reference is to help expand the customer base of the start-up company. Thus, sales growth indicates more precisely the success of the utilization of the first customer reference. According to Mäkinen (2001), sales figures are commonly used to measure the growth. Sales figures are usually easy to obtain.

3.1.1 A secondary sample

The purpose of the interviews of the secondary sample companies was to obtain material for a deeper understanding of the phenomenon and to explore how broadly the results

from the primary sample could be generalized. The secondary sample companies are located in Phuket, Thailand, where their customers operate in the tourism industry. All the secondary sample companies were interviewed in person by the present author and the entrepreneurs' quotes were recorded. Topics related to variables and the results of this study were discussed ith the interviewees. Artifacts and other material were also collected. These secondary sample interviews were conducted three years after the primary sample interviews, at a different place and with companies in a different field of industry than the original interviews. Phuket's economic area is modest in size compared with Bangkok's economic area and thus, forms a different landscape.

Table 2 describes the relationships between the sub-studies, study types and sample bases.

Table 2: Relationships between sub-studies, study types and sample bases

Sub-study	Study type	Sample base
Conceptual sub-study	Conceptual study with one customer case in a case company	Primary sample
Triangulation sub-study	Triangulation study with more than 30 case companies	Primary sample
Inductive multiple case sub-study	Inductive multiple case study with 3 reported case companies out of 9 case companies	Primary sample
Survey sub-study	Survey study with 27 case companies	Primary sample
Single embedded longitudinal case sub-study	Single embedded longitudinal case study with 3 sequential customer cases in a case company	Primary sample
Assessment of the results	Assessment of the results with 6 case companies	Secondary sample
Constructive sub-study	Multiple case study with 2 case companies, their customers and a local newspaper	Secondary sample

3.2 Using triangulation

Method triangulation, theory triangulation and data triangulation are used in this study (Patton, 1987). Triangulation is recommended for use in social science by several researchers, such as Bryan (2003), Flick (1992) and Denzin (1970). The purpose of using several research methods is to investigate if the results replicate and thus, increase the internal validity of the results.

Method triangulation consists of different data collection methods. In this study data was first collected by semi-structured interviews and then by a survey using a structured interview. Data was also collected over several years and from several sources for the

single longitudinal case study. Theory triangulation analyzes the same data using different perspectives on the same data set. This study employs three complementary research methods to investigate the subject. The inductive multiple case study method is used, complemented by statistical analyses and a single longitudinal case study for comparing analyses and patterns. In data triangulation, the data is collected from different sources involving different times, space and people.

The three sub-studies in this study were executed in sequential order: first the inductive multiple case sub-study was conducted to identify the factors for this study (Ruokolainen and Igel 2004); then, the survey sub-study with statistical analyses was used to gain a better understanding of the factors and their relationships (Ruokolainen 2005b); and finally the single longitudinal case sub-study of a single case, including several embedded cases, was used to illustrate a complex multi-variable model of the real world (Ruokolainen, 2008). The single longitudinal case sub-study was also used to follow-up the iteration of factors towards break-through market entry.

3.3 Using inductive multiple case study method

The first sub-study was explorative. Neither hypothesis nor theories were setup at the beginning. The inductive research approach was used for building a basic descriptive framework from multiple cases and for finding related variables (Eisenhardt 1989). The explorative study was needed because of the scarce availability of literature references on which a theory could have been built. Statistical methods are not suitable for use without a solid understanding of the phenomena. The multiple case study method was believed to bring better understanding. The empirical material was analyzed by conducting within-case and cross-case analyses (Eisenhardt, 1989).

Nine different Thai software companies were studied to learn how they fared in expanding their business in the start-up phase. The aim was to gather homogeneous examples of the high technology companies to make comparisons possible. Only three of the nine cases are introduced in this study. The remaining six cases support the conclusion of the three cases presented, but do not add much additional insight to analyses.

A list of questions was formed to guide the interviewers. The collected material includes information about the background of the company ownership and its plans for the future, both in figures and in descriptive form. Hard figures, as well as soft data on the owner's experience of the initial phase of his or her company, were collected. The history of how and why the company was started was discussed, as well as how the company managed its first customer relationship. Most of the interviews were recorded

and there were usually two or three interviewers taking notes in the same meeting. After each interview, the notes were discussed and consolidated

3.4 Using survey method with statistical analyses

In the second sub-study, the survey method was used to gather data regarding the variables identified in the inductive multiple case sub-study for employing quantitative analyses. Linear correlation analyses were used to find the relationship between single variables and sales growth. The investigated system is a multivariate system, and therefore, linear regression analyses were also used to study the relationships of a number of variables with sales growth. Among others Tabachnick and Fidell (2000) write that correlation is usually used when the purpose is to assess the relationships between dependent and independent variables; and regression is used when the intent is prediction. The use of statistical analysis methods has been further explained by several authors (Tabachnick and Fidell 2000; Aczel, 1996; Belseley *et al*, 1980; Guilford and Fruchter, 1978).

A questionnaire was developed and tested first with the help of three sample companies before carrying out the actual survey sub-study. During the survey all the responses were acquired using interviews. In some cases, a Thai national was needed to translate from Thai to English. The questionnaire was sent beforehand to each target company. The meetings were arranged with the entrepreneurs (owners or founders) of the companies. In addition to the questionnaire, background information was gathered concerning the companies and their entrepreneurs during the interviews. In the survey sub-study phase, all the interviews were conducted in the Bangkok economic area. The full scale survey sub-study including interviews lasted two months in 2003.

The ages and sizes of the companies varied considerably. The idea, however, was not to concentrate on the current situation, but on the first years of each company. Usually two interviews were held per day. Usually the entrepreneurs widely described the start-up phase of their company and relationships with their first customer.

In linear correlation analyses, T-test (2-tailed) was used to evaluate the statistical significance of the results. A correlation is regarded as statistically significant at the level ($p<0.05$) (*) and at the level ($p<0.01$) (**). The latter demonstrates statistically more significant results than the former. In some cases, binominal distribution was used to check if certain observations could be regarded as random events; and if linear correlation could not be used. If the binomial distribution of the answer equals the random distribution then the result cannot be generalized. A binominal contingency higher than 0.05 ($p>0.05$) was used to ignore the generalization, that is, there would be

more than 5 percent probability that the same result could have been arrived at by chance.

The phenomenon investigated in this study is influenced by several variables, which may affect each other. Multiple regression analysis methods can be used to analyze such phenomenon. In these analyses, sample observations are expected to be independent and linearly correlated. Those independent variables, which correlate most with the dependent variable, are most suited to regression analyses. The main result from multiple regression analyses is R^2 and its variations. R^2 conveys how well the independent variables explain the dependent variable, which in this study is sales growth. Adjusted R^2 takes into account the number of observations and adjusts R^2 accordingly. In this study, adjusted R^2 is mainly used due to the limited number of observations. If the linear correlation between the variables is high, the variables start to mask each other's power to explain. Several indicators can be used to check if this multi co-linearity exists: several eigenvalues should not be close to zero and the Condition Index should stay below 15.

3.5   Using single longitudinal case study method

The single longitudinal case sub-study is an embedded case study (Yin, 1994), with two levels of analysis units: the company and its customer cases. The purpose of the single longitudinal study case is to obtain deeper understanding of the results of a complicated multivariate system by using a single real company case. The case company that was selected was one that had changed its business direction three times before the business took off. For each new start, it needed a new first customer reference. Each of the three sequential customer cases represents an attempt to build the first customer reference. Yin (1994) and Eisenhardt (1989) describe in detail the use of case study research in management inquiry. The results of the above mentioned sub-studies are illustrated by using a single longitudinal case sub-study.

From the single longitudinal case study point of view, the sequential changes in business direction provide a useful opportunity to follow the evolution of the variables from case to case. Holmlund (1977) writes that relationship management during the building of a customer reference can be divided into sequences and broken down further into episodes and acts. As in the Uppsala Model (Johansson and Valhne, 1977), the present state of acts, episodes and sequences affects the course of subsequent acts, episodes and sequences. In addition to the current state of the system investigated, in the single longitudinal case sub-study, company goals affect the planned actions in order to reach these goals. A goal can be described by a set of post-conditions and a starting state can be described by a set of preconditions. The time span of the longitudinal case allows the real sequence of events to be followed in order to find out how the variables iterate from

case-to-case toward the goal. The construction of a first customer reference is aimed at market entry, which can either fail or succeed. The nature of the phenomenon in this study is contingent teleological. Unbounded design or contingent teleology occurs when the end-state is not predetermined specifically, but is the result of selecting one of several available alternatives (Ayla, 1970).

The above approach can be formalized by using programming theory (Gries, 1983). According to this theory, programs can be presented by using the notation $\{Q\}S\{R\}$, where Q and R are predicates and S is a program. The notation has the following interpretation: "Completion of S starts by satisfying Q and ends by satisfying R in a finite amount of time." Q represents a precondition, pre-predicate, for starting the program, and R a post-condition, post-predicate, that must be satisfied in order to exit the program. In the single longitudinal case sub-study, S can entail completing one or more customer cases, where each customer case represents one iteration step, S. During the completion of S, the related factors might be altered, so that the state of the system also changes during each iteration step. The notation $\{Q\}S\{R\}$ provides a structure for presenting the results of an iterative phenomenon. The notation does not define whether the iteration is deterministic or heuristic. In the single longitudinal case sub-study, pattern-matching logic and time-series analyses (Yin, 1994) were used in order to illustrate the notation and to study the predicatives. The idea is to compare the observed patterns with those introduced by the basic descriptive framework. Each case was analyzed and a cross-case analysis was then carried out over the time line.

The history of the case company includes information dating from its inception in the mid-1980s until 2004. Researchers from a Southeast Asian university and a European university first gathered information relating to the company, T.J.S. Consultants Co., Ltd., in the mid-1990s as part of a large survey on Thai technology companies. A follow-up study was conducted in the late 1990s.The present author interviewed the entrepreneur for the first time in 2000 at the Software Park of Thailand. In order to complete the history of events leading up to obtaining the first customer reference, the entrepreneur was again interviewed several times during 2003 and 2004. One of the potential customers was also interviewed. In addition, the case-company-specific reports from the earlier surveys were available for this study. All the material collected, such as marketing brochures, data from the Internet and reference customer lists were also helpful for tracking the events of the company and their sequence. Material was collected for writing a teaching case study (Ruokolainen et al., 2005) including recent balance sheets, status of current competitors, staff interviews and the potential next customer. The teaching case material was tested in several courses with technology entrepreneurs and Master of Business Administration students in a South-East Asian university. Based on the previous facts, the data collected from the case company for the single longitudinal sub-study is considered very useful and unique.

4 REVIEW OF EMPIRICAL SUB-STUDIES' RESULTS BASED ON THE PRIMARY SAMPLE

4.1 Descriptive data

4.1.1 Age of sample companies

This study focuses on the first years of the software companies – their start-up phase. The ages of the investigated companies varied quite considerably with the average age being 7.1 years at the time the interviews were conducted. The oldest company was 30 years old and some of the companies were established as recently as 2000. The entrepreneurs of the oldest companies remembered well the events related to their first customer. More than 40 percent of the entrepreneurs investigated considered that the fist customer reference had been more important for their business development than the other options listed in the questionnaire. The other options included setting-up a management team and attaining educational degrees and experience before starting their company.

4.1.2 Growth of sample companies

The sales information for the first four years was collected from the start-up software companies. In a few cases the companies had existed for less than four years. In order to make the growth figures comparable, an annual sales growth indicator was created by linearly extrapolating the existing annual sales data for the missing years. The annual sales growth indicator describes how much a start-up software company should linearly grow each year in order to reach the sales figure of the fourth year. The annual sales growth of the sample companies is presented in Figure 3.

Sales figures were not obtainable from some of the oldest companies. Some of the youngest companies were still in the start-up phase and sales figures were non-existent. In addition, one of the companies differed quite strongly from the other companies: After the third year, its sales growth dramatically exceeded the others. This case was classified as an outlier and was not included in the analyses. Neither were companies with missing sales data included in the correlation and regression analysis. In some of the analyses, part of the sample data was not available and, therefore, depending on the analyses the number of companies involved varies from 18 to 21.
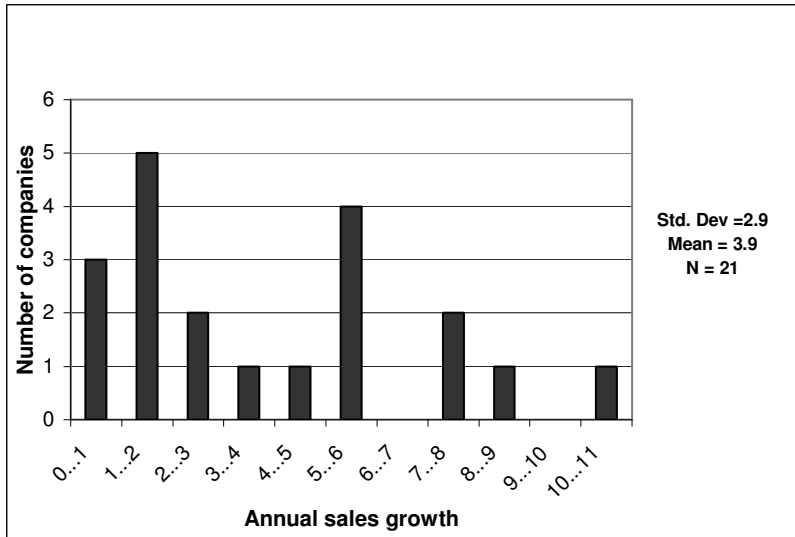
Figure 3: The annual sales growth distribution of the sample companies (millions of Baht per year)

The number of companies in the survey sub-study was not statistically big enough to calculate how the up and down turns of the economy affected the success of the investigated companies. One of the most successful companies was established during an economic downturn. Opposite examples can also be found.

4.1.3 Source of funding

The families of the entrepreneurs most often funded the Thai start-up software companies (Table 3). The binominal likelihood is less than 0.01 that the eight companies would have selected the "Family" answer randomly out of the different possibilities. This form of funding seems to be prevalent in Thai society. Table 3 shows that venture capital funding was not used widely among the sample companies. The venture capital industry is in its initial stage in Thailand. However, this result cannot be generalized statistically. All the companies were funded partly by the income from the first reference customer. Only in three cases no other funding sources were available.

Table 3: The main source of funding of the sample companies

Source of funding	Frequency	Percent
Others	1	3.7
Business angels	1	3.7
Investors	1	3.7
Venture capitalist	2	7.4
Share holders	3	11.1
First reference customer	3	11.1
Side business	4	14.8
Own pocket	4	14.8
Family	8	29.6
Total	27	100.0

Table 4 shows what self-measurements of success the investigated Thai Software companies employed. This question was partly asked in order to know the weight and motivation that companies give to growth. It is reported, for example, by Autio (1995) that not all start-up companies intend to grow. Many of the sample companies measured success by successful customer cases. Typically the companies may want to grow but not at the expense of customer satisfaction. The binominal likelihood is less than 0.01 that the 13 companies selected this answer randomly out of the different possibilities.

Table 4: The self-measurements of success among the sample companies

Success indicator	Frequency	Percent
Time to market	1	3.7
Progress with non-financial targets	1	3.7
Growth	6	22.2
Profit	6	22.2
Successful customer cases	13	48.1
Total	27	100.0

4.2 Case study descriptions

4.2.1 First case: Lacking profound knowledge of the customer

The first case company's main business is to import and translate foreign software into Thai and it has succeeded well in this business.

At the time of the first interview in 2000, the company was in the early start-up phase and only had a few employees. The owner of the company had previously worked for Microsoft in the USA. In this start-up technology company Microsoft's technology was used to develop a software system in the first customer case, which was one of the leading players in terms of sales in the entertainment sector in Thailand. A third person created the contacts with this first customer as the start-up company had no previous direct contacts.

The customer supported the development work and provided the required equipment. This first customer opened the doors for studying how the system could improve the business. Although the project itself was successfully accomplished, the customer never used the system in its operations as according to the software entrepreneur the customer's managers could not reach an agreement whether to use the system or not.

The first product did not bring any further sales for the start-up company and therefore this first customer reference case failed. The foremost reason was that the customer owned the Intellectual Property Rights of the product, which prevented the start-up software company from selling the system to other clients. The second reason for the failure was that the customer finally lacked commitment to the start-up software company's business. The start-up software company did not have an opportunity to become involved in the customer's decision process, from which it would have definitely gained a better understanding.

4.2.2 Second case: Right contacts in the right place, at the right time

The second start-up software company case study was established recently, and the entrepreneur was finalizing the first customer reference at the time of the interview in 2000. The software was designed to allow it to be copied for up to 100 offices around the country after the first implementation was finished. The first reference customer was a government agency operating in the agriculture sector, which is a key industry sector in Thailand. The entrepreneur had a personal relationship with the first reference customer because he was previously an employee in this government office. He had also worked for Oracle Thailand before starting his own company, and he was previously

part of an Oracle team that had consulted this same government agency. He had also studied and worked abroad.

This case was quite straightforward: The first customer reference success was secured by previous contacts with the customer and with the owner's experience in a big international information technology company. The owner's experience as a consultant assisted in the start of his own company, and he also had the right contacts within the customer's agency to support him.

4.2.3 Third case: From a student to a teacher

The third case company has been in operation since the late 1980s. It had at the time of the interview several hundred employees. Since its initial years, the company has provided solutions for the Thai garment industry, another key industry sector in Thailand. At the time of the interview the company had two business segments, namely customer specific projects and a standard software package.

The entrepreneur's background was in the construction industry where he managed large construction projects. Later he controlled the costs and the budget of a construction company. At the end of the 1980s he started his own company. The entrepreneur was able to select the most potential first reference customer, a friend who worked for the association of the Thai garments industry, and he succeeded in designing small applications for controlling the customer's inventories. Based on the successful experience with his first software design project he received other projects by word of mouth through the extensive network of Thailand's garment factories.

Initially the company was led mostly by the customer's requirements. At the time of the interview, the company had enough knowledge to create its own new ideas based on the latest technology and it was able to develop a new software application for a Thai subsidiary of an international retail chain. After finalizing the software the customer was ready to implement the system in the whole of Southeast Asia. At this stage the company had gained substantial experience in applying software technology, and in addition, had enough financial resources to develop new business areas in-house.

The project management background as well as knowing the factory environment gave the entrepreneur a solid base to start his own software business. Both management experience and the specific industry experience were needed for designing large scale software applications. However, one of the most interesting points of this case is that after executing several successful projects, the company had gained sufficient knowledge to bring new ideas to the whole business sector. The case company first learnt business practices from its customers and later it delivered new business practices back to its customers.

4.2.4 Single longitudinal case: Three sequential customer cases to build up the first customer reference case

Background of the case company

The case company, T.J.S. Consultants Co., Ltd., founded in the mid-1980s in Thailand, has produced complex software systems for human resource management for companies operating in Thailand since the beginning of the 1990s. The case company spent more than five years getting started because it was seeking a focus in its business by carrying out three different 'first customer reference cases', one after the other, before the business finally took off. Thus, three cases of trying to build the first customer reference are studied in the single longitudinal case sub-study. These three cases are introduced in the following sections.

The entrepreneur has a doctoral degree in mechanical engineering from the USA. Before setting up her own business she worked as a programmer and software designer for an international oil company and later was the head of department in another company.

The first customer case

The first customer case is described in Chapter 2.2.1 (page 21).

The second customer case

After the first customer case, which failed to introduce a new product to the market, the business concept of the case company, T.J.S. Consultants Co., Ltd., was to provide customized software development services for mainframe computers. The entrepreneur's idea was to become a subcontractor for a large local company via IBM. The first contact with IBM was established earlier through the entrepreneur's student colleague, who asked the entrepenuer to make a presentation of the case company for IBM in Thailand.

A major Thai car part manufacturer had contacted IBM for a quotation for a management information software system. IBM had found that standard overseas software packages were not compliant with complex Thai labor and tax legislations. IBM thus approached the case company, among other potential providers, to tender for a human resource management system, which was part of the total delivery package. This system would be a large software package, including modules for managing recruitment, payroll, appraisal and many other functions of a company.

The entrepreneur gained invaluable assistance from a friend who joined her company to prepare the offer. This friend had experience in an international accounting company preparing proposals for large projects. The case company won the contract to produce the human resource management system as a subcontractor to IBM at a fixed price.

Although IBM subcontracted the systems from the case company, IBM's role was more or less an intermediary as the primary customer was the manufacturer of car parts. Although some of the requirements came from IBM, the case company was responsible for dealing directly with the customer concerning the system's delivery and development.

Developing the software package was more difficult than anticipated. The entrepreneur had no prior experience in managing software development or in projects of this magnitude. In addition, IBM required the case company to use documentation and project management practices, with which the entrepreneur and her team were unfamiliar. As a result, the project was delayed by about one year.

The end customer, the car part manufacturing company, also introduced requirements, which had not been included in the original specifications. According to the entrepreneur, other reasons for the delay were that the project was over-staffed and employees of the case company did not have sufficient experience with the technology. The company had hired six new employees just before the project. In addition, the entrepreneur was managing the projects and training six new employees who were hired before the project and, therefore, did not have time to focus on commercial aspects.

Despite the delays, the case company was able to develop the software product successfully. The end customer applied the new software in its operations for four years and was satisfied with the performance. The entrepreneur commented: "You could say that the company was my first reference customer in software development service for a large computer system." The entrepreneur felt that it proved her ability, at least to herself, to build large computer systems for customers.

Despite the customer's satisfaction with the system, T.J.S. Consultants Co., Ltd. lost about 5 million Baht on the project - more than twice the initial capital of the company. After intense negotiations with the entrepreneur, IBM agreed to cover part of the losses arising from implementation of the additional requirements demanded by the end customer. IBM paid 1.2 million Baht on top of the original contract. The case company was saved from bankruptcy by a venture capital company, M-Group Holding Company, which was co-opted and made an investment of 10 million Baht.

The third customer case

The M-Group holding investment enabled the case company, T.J.S. Consultants Co., Ltd., to develop a new product. This was a commercial software package, based on the software delivered to the car part manufacturer which was a project with IBM.

When this first customer discovered that the case company was developing a commercial software package from the original software, it contacted the entrepreneur

through IBM and accused the case company of violating its intellectual property rights. However, the COBOL programming language used in the original software was being replaced by a newer software package, Progress, a 4th generation programming language. Because a different programming language, platform and a different database were also used, it was not easy to prove the allegations concerning violating intellectual property rights

This first reference customer, the car part manufacturer, stopped all cooperation with the case company and started buying maintenance services from another company. The case company not only lost its first customer, but also its first customer reference, even though the customer was successfully using the new product. Therefore, the case company again needed a first customer reference.

In the research archives at a Southeast Asian university, there is a record of an interview with the entrepreneur, made at the beginning of the 1990s. The entrepreneur told of having major problems with marketing and in finding customers. She had just lost her first reference customer, the customer in the above second case, and was searching for a new reference customer in the open market. Even in 2003, the entrepreneur recalled that it was very difficult to find a new first reference customer for the revised human resource management system software. She experienced difficulties convincing potential customers of her team's ability to implement and maintain the revised human resource management system and the advantages of this system. She also struggled to persuade potential customers that the system was worth the financial outlay. She had to devote considerable effort to developing sales arguments to convince customers of the benefits of her system, while she was not able to use the customer reference openly.

After extensive effort, a large, well-known Thai construction company was found that was interested in the software system, but the price of the software package had to be cut by about 50 percent, before the case company was able to secure the sale. The customer project ran smoothly without major problems due to the knowledge gained from the previous customer project with the car part manufacturer in the second case, and the time spent becoming familiar with the new technology. The construction company was ready to act as the first reference customer. The entrepreneur explained: "After we got the first reference customer, we were able to sell our software package to other customers more easily." She felt that the first customer reference had given credibility to her company and that the trust in her team by next potential customers had increased.

Growth after gaining the first customer reference

Since finalizing the first real customer reference in 1993, the case company has grown steadily as Figure 4 illustrates.
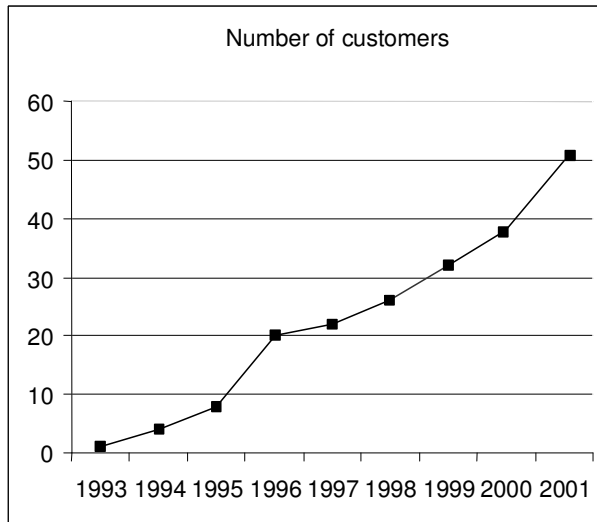
Figure 4: Number of customers since 1993 of T.J.S. Consultants Co., Ltd.

The number of customers for the human resource management system software product of the case company increased steadily to 20 in 1996. Initially customers required many system modifications to conform to their individual specific needs. Later, the system was developed as a set of standard modules to minimize the need for customer-specific modifications. The company has since concentrated on providing this software product and on offering implementation services. In 2004, the sales of the case company, T.J.S. Consultants Co., Ltd., reached 30 million Baht.

The rapid development of computers and software technology enabled the case company to introduce new versions of its software product. The old version of the product, relying on a character-based user interface, was reprogrammed in 1996 in order to implement a graphic user interface. The latest version, introduced in 2003, included a worldwide web (www) support feature based on Oracle technology.

Currently, the case company uses its customer references extensively. For example, customer comments are included in the company's marketing material, which states that the case company has around fifty important reference customers, including companies that have been customers since the post start-up phase.

The important aspect about customer references is that they add credibility to the company as a whole, not just to a specific product of the company. This was illustrated by one of the potential customers, who assessed the vendors of a new human resource management system. Selection criteria were classified into categories relating to product and price, experience and skills, and customer references. The case company and its rivals used their customer references, not only to substantiate the functionality and business benefits of their products, but also to provide evidence of their experience,

skills and ability to take care of relationships. The number and size of the completed projects were also used in comparing vendors. The size of the reference customer was not highlighted. Since the products of the companies were similar, the real criteria for selecting a vendor were not product-related.

The case company also uses existing reference customers to promote newer versions of their product in order to be short-listed by potential customers, as the above example shows, and as a way of keeping in touch with them. Customer references are collected to support the marketing effort. Their objective is clear, considering the number of customer testimonials on the company website, as the following quotation illustrates: "Judging by the number of customer references on the website, which are all from large companies, the company must be quite something."

4.3 Using the inductive multiple case study method to create a basic descriptive framework

The chosen explorative research method, inductive multiple case study, was used for identifying variables and for model creation. Nine software companies formed the sample base, from which only three cases were introduced in Chapter 4.2 (page 47). The remaining six cases support the presented three cases conclusions, but do not add much additional insight to analyses. Thus, the remaining six cases are not reported in this research report.

First, the periodization (Jessop 1990) of case studies was carried out to determine the dependent factors or outputs. Three different sequential periods concerning the building of the first customer reference were identified using the nine case studies (Figure 5). All three periods must be passed through in order to successfully build the first customer reference: (1) The first reference customer is found. (2) The system is implemented. (3) The business is expanded with the help of the first customer reference. The main output or the main dependent factor is the expansion of the business, which can be measured by growth (Period 3). The success of Period 1 can be measured by whether or not the start-up technology company has found the first reference customer. The success of Period 2 can be measured by whether the system was implemented successfully for the first reference customer.

Period 1: Finding the first reference customer	Period 2: Implementing the systems for the first reference customer	Period 3: Expanding the business with the help of the first customer reference
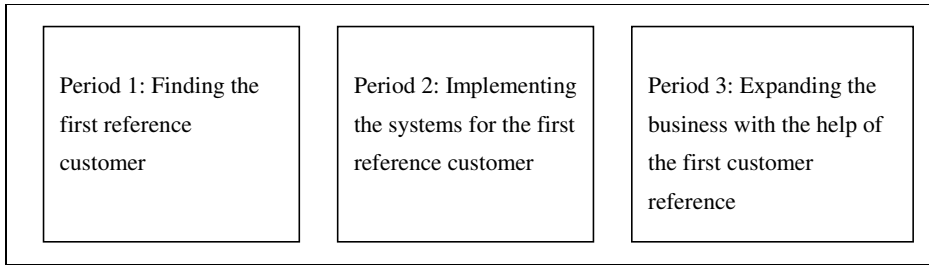
Figure 5: Periodization based on the case studies and the outcomes of each period

Secondly, several factors were found by comparing the periods across the cases. The factors are categorized based on which periods' output they affect. Each factor consists of a set of related independent variables or inputs, which are conceptualized from the inductive multiple case sub-study and other information available. The following factors and candidates for independent variables were identified across the three periods:

1. Social capital: in five out of the nine cases, finding the first reference customer was mainly based on previous contacts which were of various types. The multiple case sub-study suggests that social capital played an important role particularly in finding the first customer in Period 1.

2. Background of the entrepreneur: In the multiple case sub-study, work experience helped the entrepreneurs succeed with the implementation of the first customer reference case in Period 2. Work experience in international enterprises, in particular, seemed to have a positive effect on the capabilities of the entrepreneurs. The entrepreneurs' objective knowledge, studied by measuring educational attainment, was found to positively affect the outcome of Period 2. In addition, the literature proposes that previous work experience and objective knowledge affect Period 3.

3. Commitment of the first reference customer: The multiple case sub-study proposes that the commitment of the customer can affect the two last periods – succeeding in the implementation and expanding the business. Various types of commitments were found: development costs were shared, resources were allocated by a customer, and advice was given by a customer. Intellectual Property Rights were an issue in two of the nine cases.

4. Learning experimental knowledge from the first customer reference: In the multiple case sub-study, with the help of the first customer reference, the start-up software companies tested and learnt practices, which were important in

expanding their businesses (Period 3). Learning business-related concepts appeared to result in more sales.

5. Marketing value of the first reference customer: The marketing value of the first reference customer appeared to affect the last period, expanding the business. The literature recommends using only large reference customers (Beard and Easingwood 1996; Slatter 1992) and the multiple case sub-study points out that if the first reference customer belonged to a key industrial sector of the country, it enhanced the success of the start-up technology companies.

The above mentioned factors form the content for the basic descriptive framework. The framework forms the base to investigate the factors from the point of view of the different sub-studies and different methods. A predictive model can be synthesized by combining the outputs of the periods, dependent variables, with related inputs, and independent variables based on the factors. Each independent variable affects one or more dependent variables of the periods. The above mentioned independent variables form a mechanism to achieve the outcomes of each period in the context described. Table 5 lists the examples of the variables identified based on the inductive multiple case sub-study.

Table 5: Examples of the variables and their frequencies among nine case companies

Previous contacts to the first reference customer:
- 5 of the 9 companies had previous contacts to their first reference customer
- 2 of the 9 companies found their first reference customers with active marketing
- 2 of the 9 companies were recommended by third persons

Previous experience:
- 4 of the 9 entrepreneurs had gained experience from local companies
- 5 of the 9 entrepreneurs had gained experience from international companies

Educational attainment:
- 1 of the 9 entrepreneurs had a PhD
- 3 of the 9 entrepreneurs had an MSc
- 4 of the 9 entrepreneurs had a BSc
- 1 of the 9 entrepreneurs had an MBA

Commitment of the first reference customer:
- 2 of the 9 customers did not commit themselves to the growth of the start-up – problems with Intellectual Property Rights
- 9 of the 9 customers shared the costs of the development or paid all costs
- 9 of the 9 customers were involved in the project
- 9 of the 9 customers were ready to share the information with the supplier

Type of the first reference customer
- 5 of the 9 customers were large local companies
- 3 of the 9 customers were government offices
- 1 of the 9 customers was a small local company
- 8 of the 9 customers operated in key industrial sectors of Thailand

Gaining experimental knowledge from the first customer reference:
- 8 of the 9 companies learned about business logic
- 4 of the 9 companies learned about project management

4.4 Using the theory triangulation method to analyze single variables

In the following sections, the theory triangulation method is applied. The analysis of each single variable is done by reviewing the effect of each variable separately for each sub-study, each factor and its corresponding variable are presented from the perspective of each separate sub-study of the triangulation sub-study: inductive multiple case sub-study, survey sub-study and single longitudinal case sub-study. The variables in Table 6 are investigated.

The companies of the sample base had been in operation several years at the time they were interviewed and all the companies had found their first reference customers and had succeeded in implementing their complex products. Instead of searching for correlations, another approach was selected for investigating the success of the companies in Period 1 and Period 2. Binominal distribution analyses were used for investigating the answers in the survey sub-study to study the existence of contingency.

The last period, expanding the business, could be studied by using correlations and regression analyses.

Table 6: Variables investigated

Factor	Variable	Description
Social capital	Previous social contacts	Whether previous contacts had existed with the first reference customer prior to gaining the first customer reference
Learning experimental knowledge	Business logic	Whether the first customer reference was used for learning the business logic.
	Correct technology	Whether the first customer reference was used for learning the correct technology
	Profitable business	Whether the first customer reference was used for learning how to make a profitable business
	Sales arguments	Whether the first customer reference was used for learning about sales arguments
	Running of projects	Whether the first customer reference was used for learning about the running of associated projects related to the product.
Customer's commitment	Costs shared	Whether the development and/or implementation costs were shared between the start-up technology company and the first reference customer
	Development cost paid	Whether the first reference customer paid the development costs of the product
	Advice given	Whether the first reference customer supported implementation by giving advice
	Resources allocated	Whether the first reference customer allocated resources for implementation
Background of the entrepreneur	Educational attainment	PhD, MBA, MSc, BSc and less than BSc
	Previous work experience	Whether the entrepreneur had had previous work experience prior to setting up the start-up technology company
	Previous work experience in an international company	Whether the entrepreneur had had previous work experience gained from an international company prior to setting up the start-up technology company
Marketing value of the first reference customer	Large enterprise	Whether the first reference customer was a big enterprise
	Key industrial sector	Whether the first reference customer belonged to a key industrial sector of the country
	Age of the company	Whether the first reference customer had existed for more than 10 years

4.4.1 Social capital in finding the first reference customer

Multiple case sub-study. In the multiple case sub-study, the entrepreneurs reported having difficulties in finding the first reference customer. The literature also discusses customer uncertainty in the high technology market (Shanklin and Ryan 1987). The customer can regard a start-up technology company's new complex software product as having a high risk. Most of the start-up software companies, five out of nine, seemed to overcome this problem by using social contacts they had gained over the years. Granovetter (1973) reports a similar phenomenon in the labor market calling it "the

strength of the weak ties". In the multiple case sub-study, the first customer was most often found through various social channels, such as friends, friends of friends, former employers, or others. A contact with previous employers was an important source for getting the first reference customer.

Survey sub-study. The survey sub-study partly confirms the assumptions made based on the multiple case sub-study. In the survey sub-study, about 70 percent of the 27 start-up software companies had had previous contacts with their first reference customers. The result can be generalized over a larger population according to the binominal distribution (contingency ≤ 0.05). The survey sub-study does not confirm the importance of contacts with the previous employer. It is also not possible to state whether a certain type of previous contact was more important than the others. In the survey sub-study, the answers concerning previous contacts were distributed equally between the 10 different options given to the respondents.

Single longitudinal case sub-study. The observations of the single longitudinal case study were in line with the previous results. In the first case, the pig farm management case, the entrepreneur had the right contact to obtain the first customer. A long-time school friend provided the business opportunity for the entrepreneur's start-up software company. In the second case, the first human resource management case, the customer was found through old university contacts: The entrepreneur's former student colleague asked her to make a presentation for a customer project. The entrepreneur emphasized her seniority over her student colleague, as the entrepreneur had been her mentor at university. The seniority indicated that the entrepreneur and the colleague belonged to the same cautions circle. According to Holmes and Tangtongtavy (1997) Thai members of the same cautions circle expect to over rely on their associations for many years. The other circles listed by them are the family circle and the so-called selfish circle. In the third case, the second human resource case, finding a suitable reference customer was very difficult. The case company had no prior relationships with suitable customers.

4.4.2 Learning experimental knowledge from the first customer reference

Multiple case sub-study. In the multiple case sub-study, the investigated start-up software companies learnt experimental knowledge concerning their business with the help of the first customer reference. The companies reported that they had used the first customer reference to learn about sales arguments, the business logic concerning the product, how to run projects and how to use the technology. Several entrepreneurs said the important aspect was to learn about the business logic, that is, how the software was to be integrated into the business processes of the customers.

Survey sub-study. In the survey sub-study, the variable related to learning about correct technology did not correlate positively with sales growth. In fact, it correlated negatively with sales growth (-0.52*). This result is also illustrated by calculating the average sales growth of the companies under the different learning categories (see Table 7). However, nearly half of the companies used the first customer reference to test the technology – especially the maturity of the technology.

In contrast to the variable related to learning about correct technology, the variable related to learning about the sales arguments correlated positively with sales growth (0.55*). Companies which had learnt sales arguments grew on average faster than the other sample companies (Table 7). The sales argument usually pertains to benefits that the software system can bring to the customer. Only some of the start-up software companies had used the first customer reference to develop sales arguments. It can be assumed that developing sales arguments means a profound involvement in the business case of the customer.

In several cases the companies reported that they had learnt how to run customer projects. However, the variable related to learning how to run projects did not correlate with sales growth. Neither did the other variables related to learning, namely business logic and profitable businesses.

Table 7: The average sales growth of the sample companies under different 'learning experimental knowledge' categories (in millions of Baht per year) and correlations with sales growth (* p ≤ 0.05; 2-tailed tests; N=20).

Grouping by the answers	All sample companies	Profitable business	Sales arguments	Business logic	Run projects	Correct technology
Average annual sales growth in millions of Baht	3.90	4.4	5.24	3.71	3.56	1.73
Standard deviation of annual sales growth in millions of Baht	2.88	2.65	3.20	2.54	2.74	1.37
Correlation with sales growth	-	0.11	0.55*	-0.13	-0.04	-0.52*

Single longitudinal case sub-study. The single longitudinal case sub-study emphasizes the importance of the use of the first customer reference for learning sales arguments. The case company focused on building the required system for pig farm management. The entrepreneur explained that the company gained system definition skills; however, it paid little attention to finding and testing sales arguments to help sell the system further. Subsequently, the business failed because the size of the Thai market was incorrectly estimated.

During the first customer case for the human resource management system, the case company lacked many of the skills which were needed in order to produce a complete human resource management software system. There was no management of customer requirements in place, as well as a lack of project management skills needed to manage this size of project. Furthermore, there were insufficient technical skills, thus a great deal of time was spent solving technical issues.

In the second human resource management customer case, unskilled resources and the lack of project management know-how did not cause the problems encountered in the previous case, as those missing skills were partly learned. The entrepreneur of the case company stated that she had to thoroughly learn the sales arguments before this second customer was convinced to purchase the system and even then the customer paid only half price.

4.4.3 Commitment of the first reference customer

Multiple case sub-study. Several types of commitment by the reference customer were identified: paying the development costs, sharing the costs, allocating resources and providing advice. According to the multiple case sub-study, the lack of commitment of

the customer is one of the reasons why the start-up software companies fail with their first customer references. The multiple case sub-study also indicates that the interest of the first reference customer may not meet the business needs of the start-up software company. The customer can, for example, use a small supplier to test the technology and to acquire the Intellectual Property Rights to prevent the development of competing technology.

Survey sub-study. Those start-up software companies which shared the costs with the first reference customer grew on average faster than the other sample companies (Table 8). The correlation between the variable costs shared and sales growth was 0.54*. This result reflects the problems related to the Intellectual Property Rights. If the costs are shared, the ownership of the Intellectual Property Rights of the start-up technology companies' new products might be unambiguous and more apparent. On the other hand, it can be assumed that if the customer pays the costs or part of them, then the customer is more demanding of the business benefits of the investment. In the survey sub-study, the other categories of customer commitment did not correlate with sales growth.

Table 8: The average sales growth of the sample companies under the different 'commitment' categories (in millions of Baht per year) and correlations with sales growth (* $p \leq 0.05$; 2-tailed tests; N=20)

Grouping by the answers	All sample companies	Resources allocated	Development paid	Costs shared	Advice given
Average annual sales growth in millions of Baht	3.9	3.07	3.15	6.14	3.88
Standard deviation of annual sales growth in millions of Baht	2.81	2.30	2.86	3.28	2.66
Correlation with sales growth	-	-0.19	-0.28	0.54*	-0.11

Single longitudinal case sub-study. The single longitudinal case sub-study also supports the results of both the multiple case sub-study and the survey sub-study. The customer of the pig farm management case was a close friend of the entrepreneur and probably, therefore, the customer committed clearly to the business of the case company: the customer was ready to share its knowledge and to help the start-up software company develop the first version of the software by agreeing to let it be tested on the customer's farm.

The customer of the first human resource management case approached the subcontractor, the case company, with the traditional purchasing strategy. The customer's interest appeared to be in pressurizing the subcontractor on price issues. The customer also paid for the development of the software product, and after not reaching

an agreement on the Intellectual Property Rights the customer refused to give consent to the case company to use this case as a customer reference.

Ownership of the Intellectual Property Rights played no role in the relationship with the first reference customer of the second human resource management case because the case company gave significant discounts to the first reference customer. The commitment of this customer to the business of the case company exceeded the commitment of the customer in the previous case.

4.4.4 Background of the entrepreneur

Multiple case sub-study. In the multiple case sub-study, all the entrepreneurs had previous work experience before starting their own companies. Experience gained by them in international enterprises could possibly lead to better success in implementing the first customer reference than experience acquired in a domestic company. International companies usually develop methods and standard procedures to guarantee successful implementation of their complex systems. Furthermore, in the sample companies of the multiple case sub-study most of the software entrepreneurs had a university education (Table 5).

Survey sub-study. In the survey sub-study, about 85 percent of the entrepreneurs of the sample companies had work experience before starting their own companies. The result can be generalized to a large population (binominal contingency ≤ 0.01). Many of the entrepreneurs had previously worked in large international companies like Siemens, Microsoft, and IBM. However, the survey sub-study did not support the proposition that the entrepreneurs' experience in international enterprises is connected to faster growth. There were no statistically significant differences between international and local work experience among the successfully implemented first customer reference cases. International work experience of the entrepreneurs correlated positively with sales growth (0.21), but the results were not statistically significant.

In the survey sub-study, the educational attainment of the entrepreneurs correlated positively with sales growth (0.69**). Many of the entrepreneurs had an MBA degree and some even had a doctoral degree.

Single longitudinal case sub-study. The entrepreneur had a product development background and a strong understanding of how to systematically work towards producing a commercial product. The knowledge and experience gained from working as a programmer for an oil company had helped her produce and implement the software packages for her first customers. She had no prior experience in project management and/or marketing, but she compensated for this with her determination to fight for her

company. The fact that she has a doctoral degree is, among other things, an indication of her perseverance.

4.4.5 Marketing value of the first reference customer

Multiple case sub-study. Certain characteristics of the first customer can be more valuable than others in using the first customer reference for marketing purposes. In the multiple case sub-study, it was assumed that if the first reference customer had operated in a key industrial sector of the country, then the customer's reputation would have been more valuable from a marketing perspective. Those Thai companies which had their first customer references from the garment or agriculture sector grew faster than the other sample companies. Other options which were proposed to be valuable for marketing included the size and age of the reference customer.

Survey sub-study. The marketing value of the first reference customer was assessed in the survey sub-study, but no connection with the growth of the start-up software companies was found. Neither was any correlation found between the age and size variables of the customers and the growth of the businesses. Similarly, the key industrial sectors, in which the reference customers operated, did not correlate with the growth of the start-up technology companies either. Among the variables used as indicators of marketing value, this last variable had the highest positive correlation (0.16) with sales growth; however, none of these correlations were statistically significant.

There were some indications that big companies were perhaps attempting to pressurize small start-up software companies, which were ready to trust their counterparts in the hope of obtaining a customer reference. Start-up technology companies often do not know how to deal with large complex customers and this could be a reason why big companies are not necessarily optimal reference customers for start-up technology companies. In fact, according to Wilkinson et al. (2005) companies seek business partners similar to themselves and there is a tendency for big companies to select big companies for their partners instead of small companies and vice versa. Wilkinson and Bernett (1987) illustrate this well by referring to a small Australian exporter who stated that the company deliberately sought smaller companies as distributors as they were able to understand each other because they worked on the same wavelength of thought and opinion.

Single longitudinal case sub-study. The single longitudinal case sub-study supports the findings of the survey sub-study. The first customer case, the pig farm management case, the case company was one of the largest companies in its sector in Thailand. However, the volume of the market for the software was not in big farms but rather in small and medium sized farms, which had different requirements for farm management. In the first human resource management system, the customer was a large enterprise

with a long history in a key industrial sector of Thailand. The first customer could not be used as a reference, due to the problems caused by a dispute over the ownership of the Intellectual Property Rights. The first customer of the third case, the second human resource management case, was also a large enterprise, but it did not belong to a key industrial sector of the country.

4.5 Results of regression analyses

The variables proposed to be relevant for the growth of the start-up companies were selected for each factor group (Table 5) for the regression analysis after careful analysis by a set of complementary methods. The selected variables are listed in Table 9. Tabachnick and Fidel (2000) stress the importance of a correlation between independent and dependent variables. According to them the regression will be best when the independent variables are strongly correlated with the dependent variable but uncorrelated with the other independent variables. Table 9 shows the correlations between the variables. Many of the selected independent variables correlated strongly with the dependent variable.

The independent variable educational attainment correlates positively with the dependent variable sales growth. In addition, it also correlates positively with the independent variable sales arguments but negatively with the independent variable correct technology. However, multi co-linearity did not appear to be a problem in this regression analysis: The condition index stayed well below 15 (Belsley et al. 1980). Eigenvalues did not indicate problems, either. The correlations in question propose that those who have a higher education have a tendency to concentrate on finding sales arguments instead of focusing on testing the technology.

Table 9: Cross correlation table (Pearson correlations)

	Annual Sales Growth	Cost Shared	Correct Technology	Sales Arguments	Key Industrial Sector	Educational Attainment
Annual Sales Growth	1					
N	20					
Cost Shared	0.54*	1				
N	20	20				
Correct Technology	-.52	-0.43	1			
N	20	20	20			
Sales Arguments	0.55*	0.29	-0.43	1		
N	20	20	20	20		
Key Industrial Sector	0.15	0.02	0.02	0.02	1	
N	19	19	19	19	19	
Educational Attainment	0.69**	0.21	-0.51*	0.53*	0.06	1
N	19	19	19	19	18	19

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

A standard multiple regression was performed between the dependent variable, annual sales growth, and the independent variables costs shared, correct technology, sales arguments, key industrial sector and educational attainment. The analysis was executed using the SPSS statistical software package.

Table 10 shows the non-standardized regression coefficients (**B**), the intercept, the standardized regression coefficients (*B*), the semipartial correlations (sr^2) and R^2 and adjusted R^2. R for the regression was significantly different from zero $F_{(5, 12)} = 8.43$, p ≤ 0.001. Two of the independent variables contributed significantly to the prediction of the annual sales growth, namely costs shared ($sr^2=0.13$) and educational attainment ($sr^2=0.22$). The five variables in combination contributed another 0.42 in shared variability. Altogether, 78 percent of the variability of the annual sales growth was predicted by knowing the scores of the five variables. Adjusted R^2 is 68 percent.

To some extent the above variables seem to explain the sales growth among the target population. A larger sample would have increased the reliability of the results. The single longitudinal case sub-study also seems to support the following findings: The owner had a higher educational attainment from a university, a Ph.D. degree. The owner indicated that she also had to devise the sales arguments in order to get the first successful customer reference from the open market, and the customer and the company shared the costs of the first customer reference. Many of the difficulties were caused by inexperienced staff that were unfamiliar with the technology. The Uppsala Model emphasizes, to a certain degree, the importance of similar type factors. The related factors in the Uppsala Model include experimental and objective knowledge and

commitment to the market. However, this study puts more emphasis on the mutual commitment of both parties to each other's business in order to gain further customers.

Table 10: Summary of the standard multiple regression analysis

	B	B	sr^2
Costs shared	2.73*	0.41	0.13
Correct technology	0.85	0.14	
Sales arguments	1.20	0.19	
Key industrial sector	0.77	0.10	
Educational attainment	2.17**	0.63	0.22

N=18
$F_{(5, 12)} = 8.43*$
R=0.88**
R^2=0.79[a]
Adjusted R^2=0.68
Intercept= -2.67
*$p \leq 0.05$;**$p \leq 0.01$
[a] Unique variability=0.37; shared variability=0.42

A predictive model can be created by combining the output, the dependent variables, and with related inputs, independent variables. The variables related to the last period (Figure 5), namely expanding the business with the help of the first customer reference, can particularly be used to construct a model described in Figure 6. The variables alone do not explain growth, but they suggest what areas are important for growth.
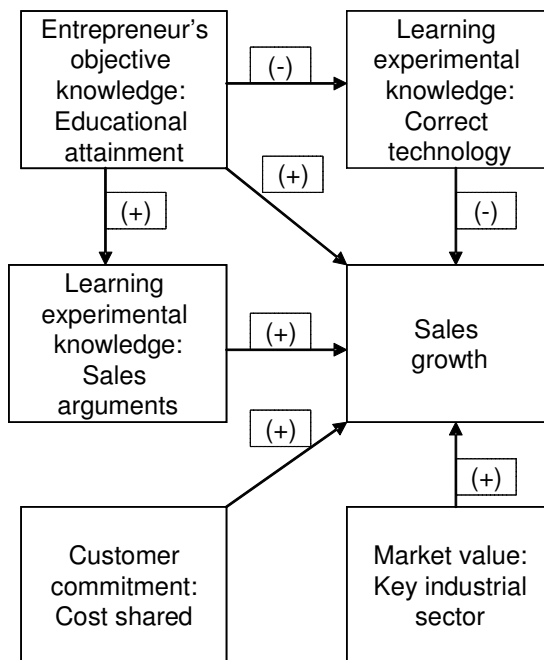
Figure 6: A model for employing a customer reference to expand the business of a start-up technology company

4.6 Using the single case study method to study iteration

The single longitudinal case sub-study illustrates how the variables iterated from case-to-case, towards the conditions in which the business took off (Table 11). In all customer cases the entrepreneur's objective knowledge and educational attainment did not change over the years. The prior contacts to the first reference customers in the first two cases helped in attaining the customer. In the third case the entrepreneur reported problems in finding the needed reference customer from the open market instead of having existing contacts. The experimental technical knowledge and project management knowledge increased from case to case, but the focus was not set on sales arguments and testing them until the third case. Lack of prior contacts to the potential customer forced the entrepreneur to develop the sales arguments. The commitment of the customers was in place in the first and in the third case but not in the second case. There are no clear identified patterns on how the first reference customers' characteristics such as size, age and industrial sector could have had a contribution on the growth of the start-up technology company.

Both this study and the Uppsala Model (Johanson and Vahlne, 1977) emphasize the iterative nature of companies' entry to new markets. As postulated earlier, the

description of the iteration can be developed by using the following notation $\{Q\}S\{R\}$. Using the classification as proposed, the results are as follows:

- The precondition, Q, for starting the iteration process for building the first customer reference to support growth through one or several customer cases, consists of the following elements: previous work experience and education, which are needed to build the customer reference and to redevelop the product if necessary. Previous work experience and education were static variables in the customer cases. They were unchanged during the realization of S. Previous contacts to customers are emphasized by this study. The contacts were needed to obtain the potential first customer reference in the cases studied.

- The necessary post-condition, R, for exiting the iterative process, consists of the following items: solid sales arguments are needed in order to acquire subsequent customers; the focus should not be on testing the product technology while building the first customer reference; and the commitment of this customer to the start-up technology company is also necessary. Other exit criteria may be related to the exhaustion of resources such as financial and social capital. If no resources are available, in most cases, the specified goals cannot be achieved.

- Each iteration step, S, can change the variables and state of the system, because, in each iteration step, during the completion of a customer case, start-up technology companies can gain experimental knowledge, such as sales arguments and technology-related knowledge, from the customer cases. Resources are either gained or lost, and, therefore, before completing a new customer case, for example, both social and financial capital must usually be checked before a new iteration step.

The preconditions and post-conditions concretize the importance and role of the variables for the basic descriptive framework. Some of the variables are needed to fulfil the precondition for carrying out S, while the others are needed to fulfil the post-condition in order to stop carrying out S, illustrates the business taking off after all the post-conditions were satisfied. Gries (1983) promotes using the weakest precondition in order to prove the rationale. Other preconditions might ensure the success of the program, S, but the rationale behind the program might be difficult to validate.

While the single longitudinal case company and the three embedded cases illustrate the basic descriptive framework in practice, it can be concluded that the basic descriptive framework provides only a limited view of the start-up technology companies' market entry. The single longitudinal case sub-study indicates that market entry can also happen iteratively through several customer cases. In practice this means that the identified variables should be divided into post-conditions and preconditions as has been done in

Table 11. Preconditions are to be met before starting the iteration and post-conditions are to be fulfilled before stopping the iteration.

One problem with the basic descriptive framework is that it does not clearly highlight the iterative accumulation of knowledge. For example, the inductive multiple case sub-study proposes that the business knowledge provided by key industrial sectors within the country could be useful. The single longitudinal case sub-study shows that the first two customer cases could have provided this knowledge, but not the third customer case. If the prediction had been based on the third customer case, it could have yielded false results. This means that the status of the variables should be followed up over the iteration steps. This is important, because it means that the entire history of the start-up technology company should be considered. Each customer case, even those that failed, should be studied in order to determine whether a start-up technology company has acquired the necessary competencies. Building the market entry could be analogous to solving a jigsaw puzzle: pieces need to be in place before the picture is complete, but the pieces can be put in place in a different order and at different points in time. In order to enlarge the basic descriptive framework so that it is more dynamic, this factor should be taken into account.

The idea of using an approach based on programming science in order to study topic-related business can be considered as the construction of a business program. The cycle time of an iteration step in a business program can last years or even decades. Such as learning to use new sales arguments can take years. It should also be emphasized that a business program is stochastic by nature, rather than deterministic.

Table 11: Change of variables over the time span

Variables / Condition type	Customer case 1: 1986-…	Customer case 2: 1988-…	Customer case 3: 1992-…	After: 1994-…	Cross pattern matching outcome
Prior contacts with the customer Q: Precondition	The customer's company was owned by a friend	A student colleague	*No contacts: major difficulties in finding the first reference customer was reported*	Need to use previous contacts for finding new customers decreased	Finding the first reference customer without social capital was problematic
Education and previous work experience Q: Precondition	Ph.D. in Engineering, work experience in software engineering	Ph.D. in Engineering, work experience in software engineering	Ph.D. in Engineering, work experience in software engineering	Ph.D. in Engineering, work experience in software engineering	In all of the customer cases, the implementations were successful
Customers belonging to a key industrial sector Q: Precondition	First reference customer operated in one of the key industry sectors	First reference customer operated in one of the key industry sectors	*First reference customer did not operate in one of the key industry sectors*	Variety of business sectors	No clear evidence of the significance of the first customer's market value
Learning focus not on technical skills R: Post-condition	*Learning how to develop technical systems*	*Learning to use technology was one of the major efforts of the team*	Technical competence was already gained with the help of customer case 2	Case 3 proved that basic competence existed; new technologies to be learnt	In failed cases, focus on technology; accumulation of technological knowledge
Learning focus on sales arguments R: Post-condition	*Insufficient focus on learning sales arguments*	*Focus not on sales arguments*	Focus on sales arguments – need to develop the sales arguments to obtain customer case 3	Sales arguments and the references exist to support sales argumentation	In the last, successful case, the focus was on developing sales arguments
Mutual commitment through sharing costs R: Post-condition	Costs shared, customer was committed due to friendship, no issues raised over the Intellectual Property Rights	*Costs not shared, customer was not committed, issues raised over the Intellectual Property Rights*	Costs shared, significant discount given, customer committed, no issues raised over the Intellectual Property Rights	No major difficulties except in exporting	In one failed case no customer commitment
Cross pattern matching outcome	Customer case 1 failed: two post-conditions not fulfilled.	Customer case 2 failed: three post-conditions not fulfilled.	Customer case 3 succeeded: all post-conditions fulfilled; two pre-conditions not fulfilled.	References, sales arguments and skills in place	

4.7 The importance of the first customer reference

In order to test the importance of 'the first customer reference', Thai software entrepreneurs that produce complex software systems were asked what had been the most important event for them (Ruokolainen, 2005a). About 40 percent of the entrepreneurs stated that getting the first customer reference was the main event in their entrepreneurial history. The entrepreneurs were also asked the reasons for gaining new customers after finishing the first customer reference case. The variable relating to credibility gained through the first customer reference correlated positively (0.54*) with sales growth (Table 12).

One of the entrepreneurs of the start-up companies established two companies: one to develop software and one to act as the first reference customer. The entrepreneur saw that the first customer reference was important and, therefore, was even ready to establish the second company to use the software. Both turned out to be successful businesses. Such an approach can be called 'entrepreneur-driven first customer reference'. This example shows also the importance of the first customer reference.

All the start-up companies in this study needed the first customer reference to help in entering the market. These kinds of start-up companies can be called reference-driven start-up companies. Usually they are small entrepreneurial companies, which develop their products and own the Intellectual Property Rights of the products. In the beginning they usually lack customer references and thus credibility because they have not previously operated in the market.

In conclusion, the first customer reference plays a remarkable role in the development of the business of a start-up technology company producing complex software products for corporate customers. Business credibility can be built with the help of the first customer reference. An interesting question is how widely this result can be expanded out of the original research population of Thai start-up software companies producing complex software for the business-to-business market.

4.8 Change in the need for social capital

The credibility gained through the first customer reference seems to outweigh the importance of social contacts in the business expansion phase after the first customer reference case is completed (see Table 12). On the other hand, the results of this study indicate the importance of relationships in finding the first reference customer. Thus, it can be proposed that a successful reference can decrease the need of using social capital for finding further customers. Several entrepreneurs also confirmed that their business

expanded by word-of-mouth after the first successful implementation. It can be concluded that the work done will speak for itself on behalf of a start-up company.

Sales growth had a weak positive correlation with the variable good contacts (0.15). This suggests that good contacts alone do not bring much additional business, but contacts can be valuable in supporting other means. As can be seen from Table 12, the combination of the variables good contacts, credibility gained by the first customer reference, and customer support together indicates even higher average sales growth than credibility alone. However, the combination does not correlate statistically significantly with sales growth.

Table 12: Start-up technology companies' sales growth (in millions of Baht per year) and correlations with sales growth according to reasons given for obtaining new customers (*$p < 0.05$; 2-tailed tests; N=20)

Grouping by the answers	All sample companies	Customer Support	Good contacts	Credibility gained through first customer reference	Combination of the previous three reasons
Average annual sales growth in millions of Baht	3.9	3.61	4.30	4.66	5.17
Standard deviation of annual sales growth in millions of Baht	2.81	2.11	2.37	2.97	1.99
Correlation with sales growth	-	-0.01	0.15	0.54*	0.23

4.9 Assessing the results with a secondary sample

A secondary sample was employed to gain a deeper understanding of the phenomena and to explore how broadly the results from the primary sample could be generalized. Various comments were collected from software companies located in Phuket, Thailand, concerning the findings from the primary sample. A large part of the sales in the Phuket economic area comes from tourism and related industries, and Phuket's economic area is significantly smaller than Bangkok's. Many of the software companies in Phuket delivered solutions for other companies which operated in the tourism industry. Table 13 shows ages, sales and market areas of these companies. Some of the companies had also been successful in delivering solutions to foreign companies abroad.

Table 13: Descriptive information of the secondary sample companies

Company	Years since the establishment of the company	Sales in 2005 in millions of Baht	Current market area
Company 1	6	10	Thailand
Company 2	5	5	Thailand
Company 3	5	10	Phuket and some customers in Europe
Company 4	9	15	Southeast Asia
Company 5	6	3	Phuket and southern Thailand
Company 6	5	2.5	Phuket and some customers in Europe

These entrepreneurs described the experimental knowledge that the companies had gained in their start-up phase. The first company producing accounting software had several beta test sites, which were found through friends of the entrepreneurs, and to which the software was given free of charge. The entrepreneurs reported that one of their main learning experiences was how to manage the customer's expectations. The following comment was given by an entrepreneur after discussing how the company used its customer references in marketing:

> **Comment 1**: "We had several beta test sites but afterwards we never really went back to the customer to ask about the benefits; and we are not really able to enter the market." // Company #1

Comment 1 supports the findings of this study that the start-up technology companies often do not use the customer reference for identifying the sales arguments.

Comment 2 below, also describes the same entrepreneur's focus on technology instead of commercial issues. The comment proposes why the focus on technology issues did not result in a break through.

> **Comment 2:** "Our first project aimed at developing an instant web page design tool which was based on the latest technology at the time. Me and a group of other students thought that we had a good idea. I put a lot of my own money in it. Unfortunately, finally we were able to sell it only to one customer. This customer never used the software. The technology was too new at the time we introduced it and the infrastructure in Thailand did not support it. We totally lacked the commercial view…. According to my advisor, entrepreneurs need to make their own mistakes." // Company #2

The two first comments propose that if the focus with first customer reference is not on commercial issues such as sales arguments, market entry might be met unsatisfactorily. At the time of the interview, the second company produced software for the spa business. Comment 3 describes several aspects of market entry to this business:

> **Comment 3:** "We didn't ask for any money from the first reference customer, but we were able to utilize the customer reference for marketing, which has made us successful. We started to publish a newsletter in which we told about the new customer reference." // Company #2

> **Comment 4:** "The nature of the spa business has been changing. The customers are contacting spas directly instead of contacts coming through the hotels. And we were able to demonstrate the business benefit through the customer reference." // Company #2

The first aspect to observe was the commitment of the customer, although the entrepreneur expressed that the customer did not pay anything. According to him, the customer invested in the hardware and the related infrastructure to get his company's system operating. This investment indicated mutual commitment, which is proposed as a success factor in this study.

A second aspect that the comments highlight is that the case company used the customer reference for finding out and demonstrating the sales arguments concerning the shift of the customers' behavior.

A third aspect is that the comments describe the market entry through several cases. The first attempt for market entry is described in Comment 2 and the second attempt in Comment 3 and Comment 4. It also seems that the three post conditions were fulfilled by this second attempt: cost sharing, more focus on finding sales arguments and less on technology issues. The technology was learned in the first case. It should be noted that the entrepreneur did not have several years of work experience. Nor did he have social capital in place which he could have used for finding a committed first reference customer. In other words, the preconditions were not in place in the first customer case.

The entrepreneur of the third company described Phuket as a small community in which people, especially inside the tourism industry, all know each other. He described that his success was based on a successful customer reference and on the effective use of word-of-mouth. The entrepreneur commented on his marketing entry strategy and obtaining commitment by sharing costs as follows:

> **Comment 5:** "The entrepreneurs here in Phuket all know each other. Therefore, the first customer reference was beneficial for our marketing at the time I set-up

my company. I concentrate on keeping existing customers satisfied and I meet them regularly." //Company #3

Comment 6: "We didn't give any discounts to our customers. It would have been difficult to avoid giving the same discounts to other customers. My company's customers, although they are competitors, discuss a lot with each other. Here in Phuket, it's a small community." // Company #3

This company case illustrates the results of this study of how to employ the first customer reference to help with the market entry. This entrepreneur also reported that finding a customer was especially difficult, because as a foreigner he did not have contacts to the community in Phuket. This case collaborates the finding that previous contacts support obtaining the first reference customer. This entrepreneur did not support the idea that cost sharing reflects the customer's commitment, as this study proposes.

The fourth company, which produced energy maintenance solutions for hotels, told that they were able to employ the customer reference by obtaining recommendations and by doing site visits. The entrepreneur explained that she also learned "to tell customers clearly what they need". This example also illustrates the result of this study that a customer reference can be used for developing marketing. The relationship with the first reference customer was not without problems. The entrepreneur stated:

Comment 7: "We were squeezed by the customer - they knew that we were a small company doing the first customer project and they wanted to take advantage of it" // Company #4

This comment gives insight as to why large companies are inclined to deal with small enterprises as described by Wilkison (2005). It also illustrates why the commitment of the customer is needed in order to enter the market. A large enterprise using its purchasing power can often squeeze a small company into a position from where it is not possible to execute further business.

Further more, an interesting comment was made by the entrepreneur about a new managing director hired by the company.

Comment 8: "We also hired a new managing director. He was good at making presentations but our sales dropped. I suppose it is difficult to sell if you do not know the product." // Company #4

This comment indicates that it is not merely a question of the market based knowledge being available. In addition, firm-based knowledge as described by Johansson and Vahlne (1977) should also be in place, otherwise market knowledge can not be fully

employed. Transferring firm based knowledge can take time. Marketing competences need to be developed from the resources available in the company. A customer reference may have a key role in developing capable marketing people. Outsiders executing marketing in a start-up technology company may not lead to optimal results. Hiring marketing people from large companies may also result in a situation in which the thoughts and attitudes (wavelengths) do not match those of the company.

The owner of the fifth company reported that his company's market entry was based on knowing the players of the market. He used to work for hotels in Phuket, Pattaya and Kabri.

> **Comment 9:** "I knew most of the players already beforehand and they knew me. I did the first version of the software for a hotel I worked for. I also did consulting work for the hotels to look at what their problems are. Sometimes I could make a deal in 1.5 hours and sometimes it takes even three years." // Company #5

One interesting observation is that if the entrepreneur has skills over several disciplines, for example, knowledge of the hotel business and knowledge in programming as in this case, the market entry is faster.

The sixth company's market entry was an outcome of a partnership of two people. One of them worked for the local radio station owned by her relatives. Her job was to do marketing for the customer and she also used the opportunity to market her partner's company. A partner of hers had earlier set-up an internet café and had written a software application to support his business. The first customer reference which came from the hotel sector was to build a software package, which was requested by a local hotel owner who knew this entrepreneur.

Table 14 summarizes the results of the interviews. The first reference customers of the companies were small and medium size companies operating in a key business sector of the country. Although all the entrepreneurs had B.Sc. level university education, the effect of the educational attainments is not addressed here. The entrepreneurs also had previous work experience, except one who had set-up a company while studying at university.

Table 14: Outcomes of the interviews

	Previous contacts	Learning focus	Commitment
Company 1	The beta test sites were owned by friends of the entrepreneurs.	Business logic of management reporting and expectation management; not in learning sales arguments.	The beta test sites got the software free of charge. The customers provided the beta test sites and invested on needed hardware.
Company 2, first customer case	The entrepreneur did not have previous contacts.	Very focused on technology and excited by it.	No commitment. First customer never used the software.
Company 2, second customer case	The owner of the company was a friend of the entrepreneur.	The entrepreneur was able to illustrate the benefits.	Software was given free of charge; the first reference customer invested in the needed infrastructure.
Company 3	The entrepreneur was a new comer in Phuket and did not have necessary social contacts.	Entrepreneur's comment: "Because we didn't have previous contacts we had to learn to be more sales oriented."	No discounts were given.
Company 4	The entrepreneur did not have previous contacts: "We did foot marketing."	The focus was on expectation management and to learn to propose to customers what they really need.	The first customer, a large enterprise tried using "iron hand" approach against the entrepreneurs' small company. Nevertheless the customer was ready to have a role as the first reference customer."
Company 5	The entrepreneur had a large social contact base in the tourism industry.	Getting arguments to explain benefits to customer.	The entrepreneurs commented: "I worked for a hotel for which I made the first version of the software; for the next customer we gave the software for half the price for test use. "
Company 6	The entrepreneur had a large contact base due to her family business.	The entrepreneur commented: "We did our own solution for our own company and we learned during that period how to do software."	The entrepreneur did not give any discounts to the first reference customer: "They came to us and asked to do software for them."

From the secondary sample it is possible to point out the same concepts as those resulting from the analyses of the primary sample: The companies used their previous contacts to find the first customers. Out of the six companies, two did not have previous contacts to the first reference customer. The companies used their first customer references for developing and demonstrating sales arguments. The first case of the

second case company illustrates the effect of placing too much importance on technology. Interestingly, the second company's two customer cases supported the division of variables into pre-conditions and post-conditions as proposed by this study (Chapter 4.6, page 67). The customer commitment concept seems to be important for the start-up technology companies as the case of the fourth company proposes. Cost sharing was applied for building mutual commitment. The secondary sample provides a tool for studying the previously found concepts in another type of business landscape.

The active use of social capital results in there being less need to focus on developing the product and the marketing concepts. This was indicated by the entrepreneur of the third company who stated that the lack of social capital forced him to be more trade oriented. The development of the product often requires demanding customers. An entrepreneur might avoid such customers if the income is ensured with less effort from another source. The conclusion is that the entrepreneurs of the start-up companies might fall into the trap caused by the use of social capital. This can occur without the entrepreneur noticing it. This case illustrates one of the three network paradoxes described by Ford and Redwood (2005). The first paradox states that company's relationships are the basis of its operation and development but the company may also be tied to its current ways of operating and, therefore, changes do not occur.

5 CONSTRUCTIVE SUB-STUDY ON CREATING MARKETING MATERIAL

A managerial challenge of any company is to translate competencies of a company to relevant sales arguments (Ritter, 2006). This managerial challenge can be even more painful for start-up technology companies because they have no supporting history to present. This study proposes that those start-up technology companies, that use the first customer reference for developing sales arguments, grow faster than average. Chorev and Anderson (2006) support the above statement by emphasizing that marketing strategy is one key success factor for start-up technology companies. However, this study adds that entrepreneurs employ customer references to test technology rather than to develop sales (Ruokolainen, 2005). Luthje and Prug (2006) propose that education to understand other disciplines in technical and economical fields leads to better performance of the start-up technology companies.

Scholars recognize the importance of the marketing but, on the other hand, claim that start-up technology companies are weak at marketing. According to Huang and Brown (1999), small companies face severe problems in marketing including designing the content for promotional media, selecting media and conducting market research. They stress the need for studies that are targeted to help small companies with marketing. Based on that and the results of this study relating to the importance of a customer reference, the research question for the constructive sub-study is how to produce marketing materials based on a single customer reference in start-up technology companies?

Since the problem from the new entrepreneurs' point of view is both a practical and a significant one, it suggests a research approach that helps solve the new entrepreneurs' marketing problems. Therefore, the constructive research approach is proposed (Kasanen et al., 1993). This research approach is employed here to create a construction for producing marketing materials that can be further published, for example in a newspaper or on a company's web-page. This goal complies very well with previous observations that entrepreneurs of start-up technology companies seldom use evidence from the customer reference to support their sales (Ruokolainen, 2005).

An essential part of the constructive research approach is to link the problem and its solution with accumulated theoretical knowledge through a literature review. The outcome of the literature review is a construction, which is tested with the field data. The constructive sub-study expects to contribute both to the research and to solving a practical problem.

5.1 Creating a construction based on the literature

5.1.1 Building argumentation on a customer reference

Andersen (2001) proposes that relationship marketing consists of three phases, namely ethos, pathos and logos that are originally derived from Aristotle's theory of rhetoric and argumentation. Ethos focuses on understanding the opponent's characteristics while pathos concentrates on the opponent's intentions. Ethos and pathos are necessary to build the pre-relationship phase and to be successful in delivering arguments in the logos phase. In other words, one needs to condition the reaction of the audience prior to starting the sales phase.

A concern of the ethos phase is the belief by the target population in the company and its product characteristics. The target of the pathos phase relates to building up and picturing the company's intentions and it addresses the audience's perception of the company's targets. The logos phase involves the use of sales arguments to convince potential customers to buy products or services from the company and should be executed after the two previous phases. Usually the communication in the pre-relationship phase is only one-way, which is from a supplier to an audience (Andersen, 2001).

Ethos is linked to the company's ability to do what it claims it can do. The successful implementation of the customer reference helps build positive beliefs, ethos, about the company and creates a company image that is credible and trustworthy. Reinard (1988) says that "the effects of evidence used on credibility invite the suggestion that evidence may contribute to one's credibility and, in turn, produce persuasive effects." According to Burgoons (1975) evidence appears to increase the influence of both low and high quality credibility sources and that they are very important if changes in attitudes are expected. This proposes that start-up technology companies, which usually have low credibility, can use evidence coming from customer references to increase their credibility and consequently ethos.

In the pathos phase, the intentions of the start-up technology company are also proven by first customer references. This happens by demonstrating that the start-up technology company is able to support the customer in reaching a set of objectives or in upholding stated values. The customer's objectives could include achieving relevant competencies, thus indicating that the start-up technology company's intentions are not only to achieve benefits for itself, but also to help the customer. Verifiable competencies also prove the intentions of the start-up technology company. Investments in developing competence are regarded as commitment to the specific market in question.

Grönroos (2004) proposes that it is not enough to understand the needs of customers, but one must also know why the customer has such needs: what its values are, and how it plans to achieve its values. If the reference customers' values differ from the values of next potential customers, the marketing message is not as effective, although the benefits are clear.

Tsai and Ghoshal (1998) find a strong correlation exists between trustworthiness and shared visions. This study proposes that the visions of the company reflect its values; therefore, in order to create marketing messages which are trustworthy, the reference customers' values should also be emphasized. Knowledge of the customers' values also affects the credibility of the source. In building the argumentation source, credibility is highlighted in the rhetoric research literature (Reinard, 1988).

In the logos phase, customer references are used for creating sales arguments that claim to be verifiable. These sales arguments relate to, for instance, achieving cost savings or gaining new markets. Reinard (1988) says that an active use of evidence suggests influence if the topic is new for the audience and if the evidence comes from different sources. If the people are involved in the topic, then the importance of high quality evidence is emphasized. Low quality evidence leads to rejection of the message.

The same types of arguments are used in both pre-relationship and selling phases. The main difference is that marketing messages need to be adapted to the communication channels, which usually are different in each phase. In the selling phase the arguments need to be more specific and concrete than in the pre-relationship phase. In the selling phase, arguments are often tailored to meet the expectations of the specific target customers, for example, the similarities between a customer reference case and a potential customer's case can be emphasized.

5.1.2 Employing a customer reference

Salminen (2001) states that customer references are used in the following ways: reference customer lists are provided to customers, articles in trade journals are published, generation of press releases and seminar presentations are made. In addition, customer site visits are common. Start-up technology companies do not usually have many customer references to convince their next potential customers. Customer references are needed to prove the ability of start-up technology companies and provide similar solutions for next customers. One of the problems of using a customer reference is that it takes a long time before sufficient experience has been gathered. Salminen (1997) quotes two years as a sufficient period.

A number of similar types of previous customer cases of a supplier can decrease customer's risks. Therefore, reference lists might be a well grounded tool for large

companies proving their capability to execute what they have promised. In start-up technology companies' cases, often only the one customer reference is needed to be employed to assure other potential customers of the company's professionalism. This requires understanding of the customer reference case. The challenge then is to create a communication method that supports such understanding.

One conclusion of this analysis is that the marketing communication should be divided into quantitative and qualitative means of communicating customer references. The quantitative reference communication is based on the amount of evidence. The qualitative reference communication leans on descriptive stories, aimed at increasing understanding. Typically, quantitative reference communication methods are used by large enterprises and qualitative used by start-up companies (Table 15). According to Reinard (1988), rhetoric research proposes that the amount of evidence does not necessarily amplify persuasive effects of the argumentation. He states that there is no magic number of references to make the argumentation more convincing.

Table 15: Qualitative versus quantitative reference communication

Customer reference communication	Companies which can typically use it	Communication type	Typical Media Channels	Decision-making criteria
Qualitative reference communication	Start-up companies with few customer references	Descriptive articles Site visits Verbal explanation of a customer reference	Newspaper articles Press releases Websites Brochures Meetings Person to person	Understanding based on the customer reference including gained benefits and verified competencies
Quantitative reference communication	Large enterprises with several customer references	Reference lists List of opinion testimonies Statistical type of evidence: graphs etc.	Websites Quotations Brochures Meetings Person to person	Track records of previous cases and known reputation

Some scholars propose that exhibitions and personal meetings are more effective communication methods than journal and newspaper articles (McGrath and Hollingshead, 1993). According to the thinking of the present author a most effective way is to let all these methods complement each other. In order to effectively communicate verbally, the right type of thinking work has to be done beforehand, for example, by writing a publishable article, which provides a solid base for sales arguments with customers.

Grönroos (2004) writes that to support successful relationship marketing all marketing messages should support the establishment, maintenance and enhancement of customer relationships. Holmlund (1997) writes that relationships with customers are divided into

sequences that are divided further into episodes and acts. Relationship management means the management of the described periods in each level and the qualitative reference communication should support this approach.

5.1.3 Creating the construction

The literature review describes what kind of a marketing message needs to be created in order to support marketing based customer references. The constructive sub-study focuses on the marketing process in Andersenian terms: the ethos and pathos phases before actual customer sales activities, that is, the logos phase. The objective of the marketing message is to initiate discussions with potential customers by demonstrating the sales arguments, intentions and competencies proven by the customer reference. Marketing messages based on customer references should provide a base for managing relationships with next potential customers. In practice, messages should cover the items listed in Table 16.

Table 16: Content for the construction in communicating a single customer reference qualitatively

- The values of the reference customer
- The business benefits of the customer reference
- The improved competencies of the customer
- The competencies of the start technology company including services
- The commitment of the reference customer to the business of the start-up technology company

In Table 16, the first item shows that the values of a reference customer need to be identified: why does this customer do this business and what are its targets? Next the business benefits that support achieving these values are pinpointed and other relevant arguments are brought up. The competencies which customers can gain, with the help of new solutions provided by the start-up technology company, can be communicated. For example, if the software is designed for stock control, then improved competencies relating to stock management can be discussed. Another aspect is to communicate what the competencies or learning experiences are that the start-up technology company gains from the customer reference. The customer reference does not only test the functionality of the product, but it also tests related services. According to Grönroos (2004) services either make customers satisfied or unsatisfied, thus this kind of gained experimental knowledge could be beneficial for next potential customers.

Customer commitment to the business of the start-up technology company is also an important signal in order to promote joint involvement in developing the business of the start-up technology company and its competencies. This message is needed to create trust in the future benefits which are brought in by the start-up technology company. Although in most cases customers' intentions towards start-up technology companies are not deliberately negative, other cases do exist (Ruokolainen and Igel 2004; Ruokolainen et al. 2005). Therefore, the present author proposes that customer

commitment to the start-up technology business should be highlighted in the marketing communication message. The commitment of the customer to the start-up business enhances the ethos of the start-up technology company.

The marketing message based on the items in Table 16 allows potential customers to compare their business cases with that of the reference customer. If the business case of the potential customer is similar to that of the reference customer, then this further enhances communication and interest by the potential customer. However, it might be difficult to know what kind of business cases potential customers might have. But without bringing up the reference customer's business case it is difficult to assess if it matches potential customers' business cases. Marketing is also used for testing potential interest. The present author recommends that potential arguments should be tested with several potential customers in order to establish their effectiveness. According to Frazier (1983), Andersen and Sorensen (1999) the benefits and costs of one's suppliers are scarce commodities.

One of the Thai entrepreneurs commented that it is enough that the first reference customer has a good reputation. It is believed that the reference customer's reputation is built on top of commendable values. Another Thai entrepreneur stated that after the first customer reference, trust in her team increased, highlighting the point that customer references are used for promoting competencies. Start-up technology companies' new products might have technical problems, therefore, competencies to solve the problems are needed and these competencies should be demonstrated.

5.2   Method and data

Kasanen et al. (1993) state that a constructive research approach means managerial problem solving through the construction of models, diagrams, plans, and organizations. The constructive research approach has been used by several scholars in various research contexts. For example, Mendibil and MacBryde, (2005) have used it for designing a team-based performance measurement system and Rautiainen et al. (2002) have used it for constructing a framework for developing software solutions.

Kasanen et al. (1993) propose that three market tests can be applied on a new construction. The first one is the weak market test and means that the business unit manager responsible for the financial results is willing to use the construction. The second test, the semi-strong market test, means that the new construction is widely accepted by companies. The third, the strong market test, means that companies systematically use the construction to produce more competitive results than their competitors. According to Kasanen et al. (1993) even the weak market test is relatively strict and often tentative constructions are not able to pass this test.

The constructive sub-study aims at satisfying the weak market test and creating avenues for further market tests defined by the construction research method. According to Kasanen et al. (1993), the constructive research method can be either quantitative or qualitative or both, although usually case-study methods are applied. Constructive research is by its nature closer to normative research than descriptive research. Both action research and the constructive research presuppose that a researcher adopts the role of a "change agent" supporting participants of the organization in their learning processes.

The constructive sub-study focuses on creating materials that selected companies can use as a base for marketing in different communication channels. Examples of such materials are articles for newspapers and case stories on web pages. The material is created according to the proposed construction with the present author acting as a change agent through involvement in generating the materials and publishing them in the chosen media.

The multiple case study method, "Within case analysis – Cross cases analysis", was used (Eisenhardt, 1989). The data was collected while generating the market material and executing the research within a group of the selected start-up technology companies. The request to participate in doing the constructive sub-study was sent out by a government organization, Software Industry Promotion Agency, to a number of companies operating in Phuket, Thailand. It was decided that the focus would be on software companies producing solutions for industry. Selection consisted of two similar companies with different customer reference cases, in order to see if the results would be similar, that is, to replicate results (Yin, 1994). Following this, meetings were held with the two companies and their customers and a local newspaper. The newspaper was selected as a communication channel and to test if the created material was publishable. In addition to the meetings, several phone calls and emails were exchanged to discuss the draft articles and to produce the enhanced ones with both of the companies.

The purpose of the constructive sub-study is to comply with the weak market test (Kasenen et al., 1993) which proposes that the construction has a business interest but does not necessarily indicate that the proposed construction brings economical benefits. This study tests the construction in two practical cases which lend some support on generalizing the result to a larger population. The internal and external validity is discussed in the conclusion section.

5.3 Case descriptions and analyses

The two case studies describe how the qualitative marketing materials were developed using the construction. The case descriptions include the following elements: first, the

backgrounds of the start-up technology companies and their current marketing practices are explained; secondly, the backgrounds of the customer reference cases including the values of the customers are explained; and thirdly, the benefits and the competencies gained are described. Finally the usability of the construction is analyzed in the light of the two cases. The present author was involved as a change agent in the creation of the material, in accordance with the constructive research method.

5.3.1 First case: Thai cooperative commercial portal

Blue Dzine, set-up by a Japanese entrepreneur who arrived in Phuket in 2002, first designed web pages for the Phuket tourism industry. Nowadays, with less than ten employees, 80 percent of its turnover comes from software development and 20 percent from web design. Blue Dzine's marketing is based on word-of-mouth. According to the entrepreneur, tourism businesses in Phuket deal intensively with each other; therefore, he concentrates on keeping his current customers satisfied. A local salesperson takes care of the local companies and the entrepreneur concentrates on foreign customers. The entrepreneur had planned to describe customer cases in more detail on the company's web pages to support the marketing function. Thus far, the reference communication material had not been widely used by Blue Dzine, but some of the customer cases were referred to by name in the company's website news.

Thai collaborative commerce platform is one of the first one-stop tourism e-shops for Thailand. This collaborative commerce platform was developed together by a government organization, Software Industry Promotion Agency, and Blue Dzine, a private company. Software Industry Promotion Agency subcontracts and develops software solutions for the key industry sectors of Thailand, such as the tourism industry to ensure the future competitiveness of them.

Design of the qualitative reference communication material began by first looking at the goals of the customer, Software Industry Promotion Agency, which is defined as follows: "To increase the competitiveness of key Thai industrial sectors by promoting information technology solutions." Knowing the goals of the organization helps understand why Software Industry Promotion Agency wants to develop the collaborative commerce platform for the tourism industry as it is one of the key business sectors in Thailand. It also shows that the supplier was working for the core business of its customer.

The benefits of the cooperative commerce portal are twofold: (1) tourists can use the portal as a one-stop shop to buy a variety of tourism services, and (2) the tourism service providers can put together packages for the tourists. This cooperative commerce platform improves the competence of the tourism service industry providers by

increasing cooperation between different kinds of players in this industry with the help of information technology.

Unified Modeling Language (Sommerville, 2004; Pressman, 2004) is a common method in the software industry to describe systems to be implemented. The case illustrates that the supplier, Blue Dzine, is competent to be a partner in building a large scale system using Unified Modeling Language, and it also has the competencies needed for subcontracting. The customer also readily stated that it was satisfied and willing to continue with Blue Dzine. With such a statement the customer indicates trust in its partner.

5.3.2 Second case: Accounting software

The company, Phuket Programmers, develops accounting software for small and medium sized Thai companies. The company was set-up in Phuket in early 2001 by an English couple after they had sold such a company to investors in England. Both of them have extensive experience in the software industry in England. Phuket Programmers' marketing concentrates on offering the program for a limited use, free of charge. The start-up technology company has also been involved in producing an educational book and its examples were created with the help of the Phuket Programmers' accounting product. The entrepreneurs have also been active in cooperating with various universities. The company has not actively provided information about their customers and their customers are not mentioned on their website.

As in the previous case, the design of the qualitative communication material started by looking at the goals of a reference customer. One of the first beta test sites for Phuket Programmers was IT Access, also in Phuket, which resells computers and peripherals to foreign companies operating in Phuket. The business idea of this reference customer is based on high service levels for customers in their own language. In order to provide high levels of service, the accounting should not cause problems in the company, as false receipts could be interpreted in several ways by customers.

According to the key accountant of IT Access the first and the most important feature of the accounting software is that it is reliable in an environment like Thailand where short comings in the infrastructure, such as power failures, often occur. The second main advantage of the accounting software is that it helps keep stock size and stock movements under control. In the resale business of computers and peripherals an important aspect is to have what the customers want in stock in order to avoid obsolescence. The key accountant stated that the main competence that the company has gained is better stock control, which is essential. In addition, the key accountant of IT

Access stated that she appreciated the fact that support was available from a local company.

The main competence that Phuket Programmers gained out of this case was how to make it easy to use the software. According to the key programmer, a large part of his job was spent on making the accounting system as self-explanatory as possible in order to minimize the need for support.

5.3.3 Analyses of the practical usability of the construction

The constructive research approach always attempts to demonstrate the practical usability of the constructed solution (Kasanen et al, 1993). A discussion on the usability of the construction follows.

In the first case study with Blue Dzine, the customer and its organization was known by the present author beforehand and, therefore, the qualitative description of the customer reference case was easily produced. The material was created based on interviews and discussions. The acceptance process on the customer's side for publication was not straightforward as the Software Industry Promotion Agency office in Phuket was unsure if they could accept the publication. The permission for publishing the article on a website was easily granted by the Bangkok head office, but its publication in a newspaper caused more discussion between the present author, Blue Dzine and different branches of Software Industry Promotion Agency. The problems in obtaining acceptance for the article to be published in a local newspaper reflect a general problem encountered in obtaining permission from large organizations to use their names as a reference. It may also reflect problems associated with changes in the way of working. The Phuket branch manager of Software Industry Promotion Agency commented that she had not seen this kind of reference communication approach before. According to her, companies usually provide just a list of references. The Blue Dzine entrepreneur was enthusiastic to have the proposed type of descriptions on his company's web page. He mentioned that IBM publishes case descriptions, but he had not done so himself.

In the second case with Phuket Programmes, several companies which agreed to be presented as a reference customer were invited to take a part in the discussion, but meeting times were difficult to arrange. It took almost two weeks to find a suitable reference customer to discuss the benefits that it had gained. The discussion took place on the premises of the customer and four people were involved, including the present author, the key accountant from IT Access, a Thai translator and the key programmer from Phuket Programmers. The history of the reference customer company was also discussed. The customer and the start-up technology company were not known in advance by the present author and therefore a plan of the interview needed to be prepared prior to the meeting. The first challenge in the discussion was to find out what

the business idea of the reference customer was. After discussing the goals of the company and how it serves its customers, the values of the customer were identified. The second challenge was to identify the benefits gained by the customer. This entailed looking at the use of the accounting software from different angles, first from the accountant's point of view and then from the managing director's point of view. The questions relating to the newly gained competencies were also difficult to address. Finally, after comparing the company's situation before and after the current accounting software was introduced, the accountant put forward the new competencies that were gained through the implementation of the new system. Afterwards, Phuket Programmers' entrepreneurs commented that they had never previously gone back to the customer to enquire about the benefits.

The present author contacted *Phuket Post* to discuss publishing the article that was drafted together with the entrepreneurs. A meeting was arranged with an editor to discuss the content and several versions of the article were written together with the editor, the present author and the two entrepreneurs. The article was published at the beginning of December 2006 (*Phuket Post*/2006/49). The newspaper article is described in Table 17, which includes the items mentioned in the construction (see Table 16).

The lesson learned from the interviews is that it is imperative to study the history of the customer's company from the point of view of the product as well as understand the different user perspectives within the organization, in order to find out the benefits and competencies gained in a limited time without knowing the customers well beforehand. One experienced employee can provide the necessary company information requested for marketing purposes.

Table 17: The content of the two cases

	Blue Dzine's customer reference case	Phuket Programmers' customer reference case
Marketing target	Expanding the business	Expanding the business
Customer Reference	Tourism cooperative commercial portal	Use of accounting software
Reference customer	Software Industry Promotion Agency	IT Access
Values of the reference customer	Increase the competitiveness of the key Thai Industry sector	Keeping high level of service for its customer in their own language
Benefit 1	One-stop shop centre for tourists	Reliability in unreliable infrastructure
Benefit 2	Tourism industry to build a solution package	Management reports, such as stock control reports
New competencies for end users	Providing better services for tourists through the portal	Better management control of areas such as stock control with real time monitoring
New or demonstration of existing competencies	Unified Modelling Language skills demonstrated Wide range of system creation skills demonstrated	Maintenance skills Skills to build software that is easy to use
Customer commitment	Ready to work with the supplier in the future	Ready to work with the supplier in the future

5.4 Discussion and conclusion of the constructive sub-study

The constructive sub-study aimed at answering the research question of how to produce marketing materials based on a single customer reference in start-up technology companies. With the help of the literature review, the proposed construction was created and tested in two practical cases. The conclusion is that a customer reference can be used for creating publishable material for marketing purposes and, thus, to promote start-up technology companies. Besides advising start-up companies on how to create a market message, this sub-study proposes that the benefits of the product and new competencies of the customers can complement each other by being communicated together. This contradicts Ritter's (2006) statement that competence based marketing should move the focus away from products.

A good sign is that a local newspaper published the articles (*Phuket Post*/2006/49). In addition, one of the two companies commented that the newspaper article would boost its planned promotion event in a local bookshop: "During this month we are doing a

small promotion in a bookstore, and the article should give some reinforcement." This also illustrates the need to combine the different marketing messages of different phases and channels as referred to earlier. The representative of this same company also maintained that the proposed construction was planned to be used further for their web page using IT Access. "I will then follow-up with further user-based pages using different types of businesses. This idea goes very well with our emphasis on vertical markets."

The constructive sub-study does not yet prove that the proposed construction brings economic benefits to the companies applying it. Although it is too early to conclude this, there is good potential for it. As this study proposes, sales growth correlates with how well the start-up companies can use the first customer reference for their marketing. If the construction proposed by the constructive sub-study can be employed to produce marketing material in practice, then it can enhance sales.

The two case studies support the notion that start-up technology companies rarely use customer references (Ruokolainen, 2005). Now there is a serious attempt to advise start-up technology companies on how to create marketing materials in order to increase sales: the proposed construction provides a guide as to what kind of information should be gathered to produce publishable information.

The results of the constructive sub-study have the potential to be generalized for other similar types of companies. The construct has been tested in two practical cases and the newspaper article has been published. Each case needed the present author's contribution as well as contributions from the entrepreneurs and the newspaper in question. The present author acted as the change agent while helping to generate the marketing materials. The problem in using the proposed construction, the qualitative communication approach, is that start-up technology companies seldom have capable writers to produce an article for publication in a newspaper. External consultants may be needed to create marketing materials based on customer references.

6 DISCUSSION AND CONCLUSIONS

6.1 Achieving the objective of this study

The objective of this study was to find factors that affect success or failure in building the first customer reference. Much effort was put into finding these factors. The research domain was defined, relevant concepts in the literature were studied and new concepts were defined. Several research methods were applied including an inductive multiple case study supported with statistical analyses and a single longitudinal case study. Linear correlation and regression analyses were carried out. The importance of the variables related to sales growth was studied. The single longitudinal case sub-study was conducted to illustrate and to concretize the results. It showed how the complex multivariate system related to market entry was reflected in a real life company case. A predictive model was created based on the analyses. A single longitudinal case sub-study was also used to investigate the iterations of the variables from one customer case to another in a start-up technology company. In addition, an independent secondary sample was employed to gain a deeper understanding of the phenomenon and to explore how broadly the results from the primary sample could be generalized. A construction was created in order to give practical advice for start-up technology companies on how to produce marketing material.

Based on the analyses, the following five variables were identified: costs shared, correct technology, sales arguments, key industrial sector and educational attainment. These five variables explained nearly 70 percent of the sales growth according to the regression analysis that was performed. In particular, the variable educational attainment, which measures the level of objective knowledge; and the variable costs shared, which measures the first reference customer's commitment, appear to support growth. In addition, the single longitudinal case sub-study illustrates how the investigated variables iterated from one customer case to another and how the variables can be divided into the pre-predicates and the post-predicates. The objectives that where set at the outset of this study were reached.

The research methods chosen complemented each other well. The inductive multiple case sub-study provided a veritable mine of information on the process of building the first customer reference and about variables related to the phenomenon. In addition, it provided preliminary findings. The survey sub-study helped study the variables and in enabled them to be profoundly understood. The single longitudinal case sub-study complemented the other two research methods by presenting a concrete view on the variables and showed how the time element affects the market entry. Although the conceptual sub-study based on the literature review was unable to form a foundation for

nomothetic research, it increased the understanding of the phenomenon. This makes this study well grounded.

In conclusion, the first customer reference plays a remarkable role in the development of the business of a start-up technology company producing complex software products for corporate customers.

6.2 The reliability of the results

The reliability of the results was increased by the fact that theory triangulation was used by employing several research methods to analyze the same phenomenon. In this study, single variables are studied by using three complementary empirical research methods, namely, multiple case study, survey and single longitudinal case study, and the results of the related sub-studies are compared simultaneously. In other words, the several research methodologies did not only complement each other, but also provided possibilities to investigate if the results replicated.

In addition, the secondary sample also provided an additional view of the results of this study. The parallel results of the secondary sample propose that similar results could be achieved in other types of business landscapes. With the help of the secondary sample, many of the concepts identified by the primary sample were able to be confirmed.

Interviews are preferred to postal surveys in terms of obtaining reliable information. In this study, all the representatives of the sample companies were interviewed face-to-face even for the survey. In addition, some of the companies were interviewed several times in the different study phases.

The size of the survey sample is small, yet large enough to create additional insight on top of that gained from the multiple case sub-study. The sample size could have been increased by selecting samples from other industry sectors or countries, but the additional variables, differences between businesses and differences between countries, might have masked the effects of the investigated variables.

Many start-up companies prefer not to grow rapidly. Instead, the companies often prefer to become profitable. For a high percentage of the start-up companies the sales growth can clash with the goal of being profitable, especially in situations where the company has to finance the increasing need for working capital. Most of the primary sample companies in this study measured success by successful customer projects (Ruokolainen, 2005a). This measure can reflect willingness to grow, but not at the expense of customer satisfaction.

The success of the companies' sales growth depends on many variables. The literature includes studies that have been executed to find out why some companies grow and others do not. A number of them were studied in this study. Although the results of this study explain part of the growth, there are other variables which explain the growth as well.

It is not always possible to eliminate distortion when people are used as the primary source of information. As Autio (1996) stated: "Many of the variables, for example the motivations affecting the behavior of individuals, are often not fully comprehended even by the individuals themselves". In all studies, as in this present one, in which a researcher executes a study in a foreign culture, he or she can have difficulties to completely understand how the foreign norms are linked to the investigated phenomenon.

6.3 Comparing the results with the literature

6.3.1 Contribution to the present scientific literature

The process of employing the variable concerning the first customer reference together with variables linked to the process, forms a basic descriptive framework (Chapter 4.3, page 53), which contributes to the scientific knowledge of entrepreneurship and marketing literature. Such a framework has not been introduced before. It gives a base for assessing the importance of single variables and combinations of variables as has been done in this study. This study also contributes to the research on marketing and entrepreneurship by providing new information of the single variables and the combinations of variables related to the basic descriptive framework. Based on the analyses of the variables, a predictive model (Figure 6, page 67) was created. This study also contributes to the scientific knowledge by introducing a domain model, which increases understanding of the role of the customer reference in the light of the concepts introduced in the literature and in this study itself (Figure 2, page 19). Such a construction (Chapter 5.1.3, page 83) on how to use a customer reference in marketing has not before been introduced in the literature.

6.3.2 High Tech Market

This study emphasizes the importance of first customer references in order to dispel the market uncertainties and skepticisms related to the start-up technology companies. This topic and the mechanism behind it have not previously been widely discussed in the literature. The importance of a customer reference in entering the market is undeniable

for start-up technology companies which intend to design and produce complicated products.

In addition to the fact that the high technology market is volatile (Beard and Easingwood, 1992; Beard, 1995), this study proposes that this market can even be hostile to start-up technology companies. The unbalanced negotiation power can even jeopardize the existence of the start-up companies as this study illustrates in regards to ownership of the Intellectual Property Rights. The decision process of a large enterprise can also be complicated and time consuming. The amount of effort required to obtain a decision from a large organization can require resources and skills that start-up technology companies can not afford.

In a literature reference it was recommended that large customers should be used as a customer reference (Beard and Easingwood, 1996). This recommendation seems to be based more on observation of marketing tactics used in some companies instead of a proper investigation of the subject. It also seems to be a common assumption that the bigger the reference customer, the better it is from a marketing and sales point of view. This study did not find support for this assumption and the corresponding recommendation.

6.3.3 Entrepreneurship research

Many of the literature references of entrepreneurship research emphasize the role of the entrepreneurs' backgrounds and personalities for the growth of the start-up technology companies. More recent studies give increasing weight to industry and market factors (Bank of England, 2001). This study points out variables and practices which give weight to the more recent studies. For example, the start-up technology companies are advised to focus on finding sales arguments with the help of the first customer reference.

This study reveals that the knowledge of how to use a first customer reference to gain growth is not well known among the entrepreneurs. For example, the entrepreneurs interviewed had a tendency to use first customer references for learning about the new technology instead of finding sales arguments. Freel's (1998) finding that technology entrepreneurs' interest to concentrate on technology issues at the expense of commercialization also supports this statement. Luthje and Prug (2006) support Freel's statement by proposing that technology entrepreneurs should increase their understanding of other disciplines such as economics.

Yli-Renko (1999) has stated that social capital is an important vehicle for start-up technology companies to access complex, tacit knowledge of the customer. She writes that acquisition of tacit knowledge leads to better performance of start-up companies measured by success in product development and technical distinctiveness. It can be

argued that success, as described by Yli-Renko (1999), is partly a result of the motivations of entrepreneurs to focus on technical issues. The social capital might only help to catalyze this motivation. According to this study, development of sales arguments with the help of the first customer reference leads to higher sales growth performance than using the first customer reference for studying related technology issues.

The importance of social contacts in finding customers for start-up companies is discussed in the literature. This study places emphasis on the importance of social contacts in order to find the first reference customer. However, it appears that the need for using previous contacts for gaining further customers decreases when the start-up technology company can demonstrate the first customer reference. It might be possible that an extensive number of previous contacts could actually prevent the development of the business of a start-up technology company if the contacts are used for avoiding challenging customers. A challenging customer can be used for renewing products and business concepts.

In the literature, there are contradictory results concerning the importance of education in small companies or start-up companies (Chapter 2.3.5, page 28). According to this study, the educational attainment of the entrepreneur seems to correlate positively with sales growth.

6.3.4 The Uppsala Model

According to the Uppsala Model (Johanson and Vahlne, 1977) the main obstacle in accessing a foreign market is the lack of knowledge. In the model, knowledge is divided into two categories. Objective knowledge can be gained through education but experimental knowledge can only be gained through operations, for example, by working with a customer case. Johanson and Vahlne (1977) emphasize the importance of experimental knowledge.

The first customer reference often is a significant source of experimental business knowledge for a start-up technology company. Johanson and Vahlne (1977) also emphasize the importance of experimental knowledge as a means of gaining business opportunities. The concept of the customer reference has been created for convincing the next potential customer to buy the product from the company in question. There is a strong link between the customer reference and experimental knowledge at the conceptual level.

This study highlights the value of objective knowledge acquired through educational attainment. Educational attainment correlated strongly with sales growth. Educational attainment also correlated positively with learning the sales arguments but negatively

with learning the right technology. This is interesting because the level of educational attainment can then indicate whether an entrepreneur is focused on commercial rather than technical issues.

The Uppsala Model emphasizes the commitment of the companies in terms of allocating sufficient resources and funding while entering a foreign market. This study, however, points out that customers' commitment to start-up technology companies' business should also be regarded as an important factor. In fact, mutual commitment to each other's business is proposed as a means for making a business relationship successful. Mutual commitment can occur, for example, by sharing costs of the first customer reference.

The Uppsala Model divides experience into firm-based experience and market-based experience. In case of start-up technology companies, the firm-based experience can not exist because start-up companies are new and have not been able to acquire such knowledge. Nor is market-based knowledge easily available for start-up technology companies, which can seldom provide incentives as attractive as those of large enterprises for their sales and marketing staff. Many of the entrepreneurs in this study found their first customer by using their previous contacts.

The Uppsala Model emphasizes that in domestic operations decision makers can rely on their lifelong experience. This statement is questioned in this study to some extent. This statement can be regarded as valid for those companies which have been in the domestic market for a long time and which want to introduce new products on to this market. However, in the case of the start-up technology companies the statement might not be correct. These technology entrepreneurs who lack the skills needed for entering the market may often face problems similar to companies planning to enter foreign markets.

The results of this study seem to resemble the Uppsala Model, although the Uppsala Model was originally planned for companies entering a foreign market. The present author would like to propose that a new model, which synthesizes the results of this study and the Uppsala Model, could be created for explaining the start-up technology companies' market entry. This new model could also provide a useful framework for explaining start-up technology companies' entry into the market.

In particular, models that help start-up technology companies enter global markets can be valuable. Often the local markets are too small for technology companies which produce complicated products for corporate customers. The Uppsala Model indirectly acknowledges the importance of the first customer reference by proposing that companies that are entering a foreign market do not have the necessary basic experimental knowledge and this knowledge has to be gained through successful operations in the country in question. Therefore this study includes elements which can

help companies that are planning to enter a foreign market. Johanson and Matson (1998) propose that the Uppsala Model is most valid in a start-up company case, but in a mature company situation they prefer the network model to the Uppsala Model. Both models highlight the importance of the cumulative nature of the companies' activities in the internationalization process. The network model focuses on the relationships by positioning a company against specific counterpart companies and against networks formed by other companies, with which the company has direct or indirect relationships.

6.4 Generalizing from the results

This study was carried out among Thai start-up software companies that produce complex software systems. Although there are only a few such companies in Thailand, one can assume that the number will increase as the economy grows. Statistically the results can probably be generalized over the future population: their growth paths will follow those of the previous ones if there are no major changes in technology policy or in the business landscape as described by Porter (1990).

It is possible that the present results cannot be generalized across business sectors or cultural environments. The observations of this study are likely to be country-specific to an extent, but nevertheless it is believed that they are also valid in other regions. National cultural issues can hinder generalization, but it is not believed that the particular focus topics of this study and the associated factors are strongly affected by national cultures. In fact, the results of this study in many aspects are supported by the Uppsala Model (Johanson and Vahlne, 1977) as there are substantial similarities between the concepts presented in this study and those presented in the Uppsala Model, although different factors are emphasized.

The need for the first customer reference is not just a business sector or a country specific issue. It can be proposed that a first customer reference is needed in many cases when a start-up company is planning to deal with a complex issue. For example, a start-up law office might need a first customer reference in a similar way to a start-up technology company which is trying to find a market for a complex product. It can be concluded that this study contributes to understanding how start-up companies producing complex products can capitalize on a potential market.

6.5 Contribution to the research community

This study is not the only study in the technology and entrepreneurship discipline in Thailand, but it is probably among the largest studies with multiple sub-studies and methods, although the sample size of the study was limited. This study illustrates that empirical data from the companies can be collected for scientific studies in a Southeast

Asian country, and, thus, it has opened the doors for larger studies in this research discipline in Thailand and also in other Southeast Asian countries. A major part of present entrepreneurship studies has been done either in the USA or Europe but relatively scantly in Southeast Asia. Therefore, the results of this study can have an additional value.

In the published articles related to this study and accordingly also in this study, several research methods have been applied, which have not been employed or have been employed scantly in the research discipline in question. For example, concepts from the programming theory have been adopted in order to formalize the modelling of an iterative phenomenon (Ruokolainen, 2008; Ruokolainen, 2007a). In addition, as far as it is known, a domain modelling has been applied for the first time in the management discipline for conceptualizing the research domain (Ruokolainen, 2005; Ruokolainen and Mäkelä, 2007). The domain modelling is employed typically by large scale software projects to identify concepts concerning a construction of a large scale system. The domain modelling technique was especially valuable in this study due to the fact that the topic has been studied scantly and therefore, the linkage between the existing pool of knowledge and the present problem domain was needed to be constructed. This study contributes to the present research discipline by demonstrating how the domain modelling can be applied.

The other research method employed by this study, which is also used increasingly but still relatively scantly by entrepreneurship or marketing studies, is theory triangulation, although according to Downward and Mearman (2005), theory triangulation is a necessary element of the logic of retroduction. This study illustrates how theory triangulation can be employed for increasing the internal validity of the results of the several sub-studies by simultaneously comparing the results. Again, this study is not the first in using theory triangulation but the thoroughness of how it has been used can be exemplary in the present research discipline. The knowledge of how theory triangulation has been used is documented in detail in this study and in related publications for its further use (Ruokolainen, 2003; Ruokolainen and Mäkelä, 2006).

The third research method that contributes clearly to this study is the constructive research approach introduced by Kasanen et al. (1993). Kasanen et al. (1993) argue that there is a considerable gap between management accounting research and practice, and that there is little communication between the two. They continue by asking if statistical testing and critical interpretation lead to core accounting knowledge. If the problem stated by Kasanen et al. (1993) exists in the management accounting discipline, then it can be asked whether the same problem can also be recognized in other research disciplines, as in this present one. Accordingly, the present author has been asking the following: despite the clear results of the studies and publications of them, do the results lead to any improvements in a technology entrepreneur's day-to-day life? Many of the

practical problems of the start-up technology companies are reported in this study. What can be considered unique in this study is that the results emerging from the critical interpretation and the statistical analyses have already been employed to produce material, such as the construction (Ruokolainen, 2007b) and the teaching case (Ruokolainen et al., 2005), during this research process. These have been tested and applied in practice and can be further applied by educational institutes, consultants and other practitioners with the help of this research report and the published articles.

The phenomenon studied by this study has been investigated scantly. Therefore, many of the results related to the study are unique and the value of them has already been recognized by the literature, for example, Gomez-Aris and Montermoso (2007). The added value provided by this research report for the scientific pool of knowledge, in addition to the published articles, is that it builds up knowledge presented so far, assesses it and links it into a wider research context.

6.6 Managerial implications

The entrepreneurs in all the case companies were motivated to find the first reference customer. Entrepreneurs' motivation consists of the needs to gain a first customer reference to support sales and marketing and to obtain income to finance the operations of their start-up software company. Start-up technology companies operate in a volatile technology market in which customer references are required especially for complex products.

The results indicate that there is a specific set of key variables and related practices which reference-driven start-up companies, such as the companies investigated, should apply. The practices can help avoid traps on the way to the market and to obtain the most out of the first customer reference. (1) This study proposes that existing social contacts are usually needed to find the first reference customer. (2) One of the pitfalls is signing a contract giving the Intellectual Property Rights to the customer. Customers usually do not require the ownership of the Intellectual Property Rights if the costs of the first implementation are shared between the partners instead of letting the customer pay for the entire development. (3) Start-up technology companies should focus on finding key sales arguments based on the project completed within the first customer reference. (4) Learning about the technology with the help of the first customer reference should not be the primary goal of start-up technology companies. (5) In order to increase the sales of the start-up technology company, it is not necessary to have a large enterprise as the first reference customer. For example, as one of the entrepreneurs stated, it is enough that the first reference customer is an average-sized company with a good reputation. It can also be assumed that the decision-making is simpler in small companies than in large corporations. These five principles with a proper educational

degree form a concept that can be termed the 'pragmatic approach to constructing the first customer reference'.

One of the implications is that the awareness of the topics raised in this study should be increased among technology start-up companies and especially among those which can be identified as reference-driven technology start-up companies. The factors of the concept 'pragmatic use of the first customer reference' illustrate the straightforward approaches that this study recommends to be used. The awareness of the factors can be built-up, for example, with the help of training programs for entrepreneurs. Usually setting more focus on the problematic issue improves the situation.

One of the key messages of this study is that there are certain practices that need to be applied in order to be successful in implementing the Lead User methodology: The customer should not be involved in the research and development process before the technology itself can be mastered by the start-up technology company. Without profound knowledge of the technology and visions of the possibilities of the technology, the customer's involvement easily leads to one-way discussions and only to minor enhancements of the existing solution instead of radical improvements. The importance of this is supported by Uusitalo (1998). He says that if a company meets the challenges of a universal product or process in a unique way, the significance of a reference can be influential.

Another implication is that the funding received from venture capital companies should be used for increasing the maturity of the start-up technology companies instead of hastening into designing a new product. Accordingly, the funding from venture capital companies can be used for increasing social capital and for relationship-building capabilities of the entrepreneurs, for increasing the technology know-how of start-up technology companies and for improving the knowledge of the commercial and market aspects of the entrepreneurs.

A recommendation related to the timing of the development intensity of the technological know-how can be proposed. The first product of a start-up technology company can be vulnerable to malfunction, and often it is impossible to predict which part of the product might fail. The company should develop the technology know-how in order to be capable of responding to customers' problems. It can be concluded that the main intensity of the development of the technology know-how should take place prior to launching the first customer reference.

The managerial implications of this study can be concluded in a message of how reference-driven start-up companies should divide the knowledge development intensity on the time span (see Figure 7). The turning point for the focus on knowledge development is before starting any activities concerning the first customer reference.

Before the turning point, the focus should be on increasing technological knowledge and after that on increasing the sales and marketing knowledge. It is recommended that the maturity of the technological knowledge, strength of the social capital and usability of the sales and marketing arguments are assessed from time to time.
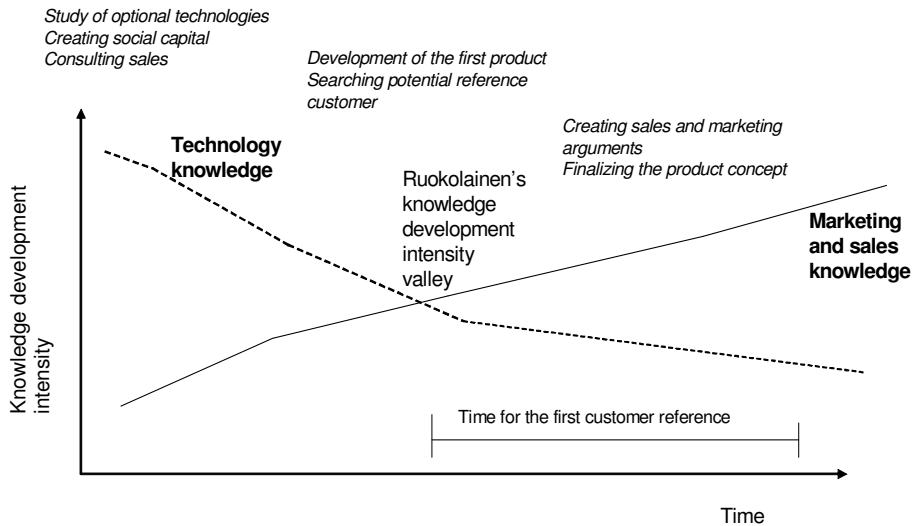
Figure 7: Knowledge development intensity on a time span

A start-up technology company that focuses on the technology without paying attention to the business benefits gained by a first reference customer probably does not convince the business-to-business market of its product benefits. According to this study, the extensive focus on technology is commonly practiced in start-up technology companies despite its frequent negative consequences. The proposal is to produce qualitative marketing material based on the first customer reference in order to convince a next potential customer. Ruokolainen and Mäkelä (2007) propose that the closer the reference business case is to the next potential customers' business cases, the more effective it is.

6.7 Avenues for further studies

The current framework was developed and tested based on several company cases. The lack of social capital can be easily verified afterwards, but the problem is how to measure the adequacy of it beforehand. A key question for entrepreneurs is how can they know if their social capital supports them enough to start their own business? For example, do their previous contacts enable them to find potential first reference customers? The same question can be asked about entrepreneurs' technology know-how

as pointed out in this study. Potential avenues for future studies can include development models or constructions on how a new entrepreneur can reduce his or her risk in regard to these aspects.

From the start-up technology companies' point of view it is also important to receive practical advice on how to conduct their sales operations and market their products and capabilities. The managerial challenge is to translate a firm's competencies into relevant customer arguments (Ritter, 2006). This study proves that the first customer reference can be used for generating practical and verified sales and marketing arguments. In addition, a construction sub-study was conducted. In it the weak market test defined by Kasanen et al (1993) was used. More profound constructive studies are needed in which investigations are made using the other two market tests proposed by Kasanen et al.

A constructive study (Kasanen, 1993) should also be executed by creating more teaching materials for technology entrepreneurs based on real life examples. An example of this approach is the teaching case written by Ruokolainen et al (2005). This teaching case was created by studying one real life company in the literature as a single longitudinal case study. With the help of a teaching case solution it is possible to transfer new knowledge to entrepreneurs and thus, support the entrepreneurs in solving problems valid from their own point of view. For example, Huang and Brown (1999) and Luthje and Prug (2006) highlight the importance of entrepreneurs' marketing education.

Another avenue is to study what kinds of consequences several references have for the start-up technology company's credibility. Several positive customer references can work to illustrate that a start-up technology company's success has not been a random phenomenon. Avenues for future research could include, for example, the formulation of a theoretical model for assessing the supplier's credibility based on customer reference.

This study proposes that the market entry can be a result of cumulative learning from several customer cases. The problem with the iterative market entry is that it can take a lengthy time. Each step can last several years and it consumes resources that are usually in short supply for a start-up technology company. Future research could aim at minimizing the number of iterations needed for finding the right set-up of the factors.

One interesting observation was that in several cases the Thai entrepreneurs emphasized the role of their start-up software companies in developing and bringing technology-related new business practices to their customers in the long run. At the outset, small start-up technology companies learn business knowledge from their customers through the customer cases. The start-up technology company can be seen as a center for gathering, developing and accumulating knowledge which is derived from different sources, including customers, and transferring the knowledge to sellable systems or

products. In the long run, start-up technology companies can also disseminate their cumulative new business knowledge back to the industry. This role change in the long term can be called 'marketing and selling maturation of the start-up technology company'. The customer of the small start-up technology company should regard its partnerships as a long-term investment to guarantee its own business. Such an approach is supported by the partnership theory. This kind of growth of the start-up technology company could be an interesting topic for further research and it could bring about valuable information on how to develop technology not as an isolated island but rather as an important member of a community.

This study has opened avenues for further and more extensive studies in the discipline of technology entrepreneurship. A large-scale statistical study would enable the external validity of the conceptual framework proposed in this study to be established. Thus, the present author would propose that the next phase of the research should be a study with a large sample size.

REFERENCES

Adler, P. and Kwon, S., (2002). Social capital: Prospects for a new concept, Academy of Management Review 27, 17-40.

Ahmed, M., (1993). International marketing and purchasing of projects: Interactions and paradoxes: A study of Finnish project exports to the Arab Countries. Swedish, School of Economics and Business Administration, Helsinki, Finland.

Aldrich, H. and Zimmer, C., (1986). Entrepreneurship through social networks, In: Sexton. D., and Smilor, R. (Eds), The Art and Science of Entrepreneurship, Ballinger, New York, USA, 3-23.

Andersen, H., (2001). Relationship development and marketing communication: An integrative model, The Journal of Business and Industrial Marketing, 16(3), 167-182.

Anderson, A., Park, J. and Jack, S., (2007). Entrepreneurial social capital: Conceptualizing social capital in new high-tech firms, International Small Business Journal, 23(3), 245-272.

Asmus, D. and Griffin, J., (1993). Harnessing the power of your suppliers, The McKinsey Quarterly, 3, 63-78.

Autio, E., (1995a). Technology-based firms in innovation networks: Symplectic and generative impacts, In: EIASM RENT IX Workshop, Catholic University of Piacenza, Piacenza, Italy, 20th -22nd of November.

Autio, E., (1995b). Sympletic and generative impacts of new, technology-based firms in innovation networks: An international comparative study, Doctoral dissertation, Institute of Industrial Management, Helsinki University of Technology, Espoo, Finland.

Ayala, F., (1970). Teleological explanations in evolutionary biology, Philosophy of Science, 37, 1-15

Bank of England, (2001). The financing of technology based small firms. Bank of England, Domestic Finance Division, Quarterly Bulletin, February.

Batory, D., Singhal, V., and Sirkin, M., (1992). Implementing a domain model for data structures, International Journal of Software Engineering and Knowledge Engineering, 2(3), 375-402.

Bauer, R., (1967). Consumer behavior as risk taking. In: Cox, D. (ed.), Risk taking and information handling in consumer behavior, Graduate School of Business Administration, Harvard University, Boston, Massachusetts, USA.

Beard, C. and Easingwood, C., (1992). Sources of competitive advantage for the marketing of high-tech products and processes in the UK, European Journal of Marketing 26, 7-20.

Beard, C., (1995). Issues and uncertainties for high-tech marketers, In: World Marketing Congress, Melbourne, Australia, 44-51.

Beard, C. and Easingwood C., (1996). New product launch: Marketing action and launch tactics for high-technology products, Industrial Marketing Management 25, 87-103.

Belsley, D., Kuh, E. and Welsch, R., (1980). Regression diagnostics: Identifying influential data and sources of collinearity, John Wiley and Sons, New York, USA

Bidault, F. and Cummings, T., (1994). Innovating through alliances: Expectations and limitations, R&D Management 24, 33-45.

Birley, S., (1995). The small firm: Set at the start. In Ronstadt, R., Hornday, J., Petersen, R., Vesper, K., (Eds), Frontiers of Entrepreneurship Research, Babson College, Wellesley, Massachusetts, USA, 267-280.

Block, F., (1990). Postindustrial possibilities: A critique of economic discourse, University of California Press, Berkeley, California, USA.

Blomqvist, K., (1997). The many faces of trust, Scandinavian Journal of Management, 13(3), 271-286.

Bourdieu, P. and Wacquant, L., (1992). An invitation to reflexive sociology, Chicago, University of Chicago Press, Illinois, USA.

Brockhoff, K., (2003). Customers' perspectives of involvement in new product development, International Journal of Technology Management, 26(5/6), 464-81

Bruce, M., Leverick, F., Littler, D. and Wilson, D., (1995). Success factors for collaborative product development: A study of suppliers of information and communication technology, R&D Management 11, 134-145.

Burgoon, M. and Burgoon, J., (1975). Message strategies in influence attempts, in Hanneman, G. and MacEwen (eds.), Communication and Behavior, Addison-Wesley, Massachusetts, USA, 149-165.

Bygrave, W., (1997). The portable MBA in entrepreneurship, John Wiley and Sons, New York, USA.

Bryman, A.,(2003). Encyclopedia of Social Science Research Methods, Sage Publications, London, United Kingdom.

Cova, B., Mazer, F. and Salle, R. (1996). Milieu as a pertinent unit of analysis in project marketing, International Business Review, 5(6), 647-664.

Chorev, S and Anderson, A., (2006). Success in Israeli high-tech start-ups; critical factors and process, Technovation, 26., pp- 162-174

Denzin, N., (1970). The research act in sociology: A theoretical introduction to Sociological methods, Butterworths, London, United Kingdom.

Doney, P. and Cannon, J., (1997). An examination of the nature of trust in buyer-seller relationships, Journal of Marketing, 61, 35-51.

Downward, P. and Mearman, A., (2005). Reorienting economics through triangulation of methods, Post-autistic economics review, 31, article 4.

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

Eisenhardt, K. and Schoonhoven, C., (1996). Resource-based view of strategic alliance formation: Strategic and social effects in entrepreneurial firms. Organization Science, 7(2), 136-150.

Frazier, D., (1980). Buyer/seller relationships in international markets, European Journal of marketing, 51, 11-27.

Ford, D. and Redwood, M., (2005). Making sense of network dynamics through network pictures: a longitudinal case study, Industrial Marketing Management, 34, 648-657.

Freel, M., (1998). Evolution, innovation and learning: Evidence from case studies, Entrepreneurship and Regional Development, 10(2), 60-80.

Freeser, H. and Willard, G., (1990). Founding the strategy and performance: a comparision of high and low growth high tech firms, Strategic Management Journal, 11(2), 87-98.

Flick, U., (1992). Triangulation revisited: Strategy of validation or alternative?, Journal for the Theory of Social Behaviour, 22, 169-197.

Fukuyama, F., (1995). Trust: The social virtues and the creation of prosperity, Hamis Hamilton, London, United Kingdom.

Gilliland, D., and Johnston, W., (1997). Toward a model of business-to-business marketing communications effects, Industrial Marketing Management, 26, 15-29.

Glaser, B., and Strauss, A., (1967). The discovery of grounded theory: Strategies for qualitative research, Aldine, Chicago, USA.

Gomez-Arias, J. and Montermoso, J. (2007). Initial reference customer selection for high technology products, Management Decision, 45(6), 982-990.

Granovetter, M., (1973). The strength of weak ties. American Journal of Sociology, 78(6), 1360-1370.

Granovetter, M., (1985). Economic action and social structure: The problem of embeddednes, American Journal of Sociology, 3, 481 – 510.

Gries, D, (1983). The science of programming, Springer-Verlag, Berlin, German.

Gruber, T., (1995). Toward principles for the design of ontologies used for knowledge sharing, International Journal of Human-Computer Studies 43 (4-5), 907-928.

Gummesson, E., (1987). The new marketing: Developing long-term interactive relationships, Long Range Planning 20, 10-20.

Gummesson, E., (1993). Case study research in management, Stockholm University, Sweden.

Grönroos, C., (2004). The relationship marketing process: communication, interaction, dialogue, value, The Journal of Business and Industrial Marketing, 19(2), 99-113.

Hannan M. and Freeman, T., (1989). Organizational ecology, Harvard University Press, Massachusetts, USA.

Herbig, P. and Milewicz, J., (1993). The relationship of reputation and credibility to brand success, Journal of Consumer Marketing, 10(3), 18-24.

Herstatt, C. and von Hippel, E., (1992). Developing new product concepts via the lead user method: A case study in a "low-tech" field, Journal of Product Innovation Management, 213-221.

Holmes H. and Tabgtongtavy S., (1997). Working with the Thais: A guide to managing in Thailand, White Lotus Co., Ltd, Bangkok, Thailand.

Holmlund, M., (1996). A theoretical framework of perceived quality in business relationships, Hanken Swedish school of economics, Helsinki, Finland.

Holmlund, M., (1997). Perceived quality on business relationships, Hanken Swedish school of economics, Helsinki, Finland.

Huang, X. and Brown A., (1999). An analysis and classification of problems in small business, International Small Business Journal, 18, 73-85.

Hutt, M. and Speh, T., (1992). Business marketing management: A strategic view of industrial and organizational markets, fourth edition, The Dryden Press Chicago, Chicago, Illinois, USA.

ITIL People (2005). URL: http://www.itilpeople.com/Glossary/Glossary_b.htm, referred on March 31, 2005.

Jae, H. and Jung, S. (2006). Technology advancement strategy on patronage decisions: the role of switching costs in high-technology markets, Omega, 34(1), 19-27.

Johanson, J. and Mattson, L., (1988). Internationalisation in industrial systems – a network approach in strategies in global competition. In Hood, N. and Vahlne E., Strategies in global competition, Croom Helm, New York, New York, USA, 287-314.

Johanson, J. and Vahlne, J., (1977). The internationalization process of the firm – A model of knowledge development and increasing foreign market commitment, Journal of International Business Studies, 8(1), 23–32.

Johne, A., (1994). Listening to the voice of the market. International Marketing Review 11, 47-59.

Keough, M., (1993). Buying your way to the top, The McKinsey Quarterly, 3, 41-62.

Levitt, T., (1967). Communications and industrial selling, Journal of Marketing 31, April, 15-21.

Leonidoy, L. and Katsikeas, C., (1996). The export development process: An integrative review of empirical models, Journal of International Business Studies, 27(3), 517-551.

Loucopoulos, P. and Karakostas, V., (1995). System requirements engineering, McGraw-Hill, Berkshire, United Kingdom.

Luthje, C. and Prugl, R., (2006). Preparing business students for co-operation in multi-disciplinary new venture teams; empirical insights from a business-planning course, Technovation, 26, 211-219.

Kasanen, E., Lukka, K. and Siitonen, A., (1993). The constructive approach in management accounting research, Journal of Management Accounting Research, (5), 241-264.

Keough, M., (1993). Buying your way to the top, McKinsey Quarterly, 1993, (3), 41-62.

Nahapiet, J. and Ghoshal, S., (1998). Social capital, intellectual capital, and the organizational advantage, Academy of Management Review 23, 242-266.

Maes, J., (2001). Small business performance: Exploring the link between management practices and the financial performance of small and medium sized Belgian construction company, Rent XV, Research in Entrepreneurship and Small Business Conference, Turku, Finland, 22-23 November.

Manuel, D. (2001). Foreign trade, In: Seline, C (Ed), The business guide to Thailand, Butterworth-Heinemann, Singapore.

McGrath, J. and Hollingshead, A., (1993). Putting the "group" back in group support systems: Some theoretical issues about dynamic processes in groups with

technological enhancements, in Jessup, L. M., and Valacich, J. S. (Eds.), Group support systems: New perspectives, Macmillan, New York, USA, 78-96.

Mendibil K. and MacBryde J. (2005). Designing effective team-based performance measurement systems: an integrated approach, Production Planning & Control, 16, (2), 208 – 225.

Moriarty, R. and Kosnik, T., (1989). High-Tech marketing: Concepts, continuity and change, Sloan Management Review, 30(4), 7-17.

Möller, K., Salminen, R., (2006). Role of references in business marketing: Towards a normative theory of referencing, Journal of Business to Business Marketing 13 (1), 1–51

Olkkonen, T., (1993). Johdatus teollisuustalouden tutkimustyöhön, Report No 152, Department of Industrial Engineering and Management, Helsinki University of Technology, Espoo, Finland.

Otsgaard, T. and Birley, S., (1994). Personal networks and firm competitive strategy: A strategic or coincidental match, Journal of Business Venturing, 9, 281-305.

Patton, M., (1990). Qualitative evaluation and research methods, Sage Publications, Newbury park, California, USA.

Phongpaichit, P. and Baker Chris (1998). Thaland's boom and bust, Silkworm Books, Bangkok, Thailand.

Porter, M., (1990). The competitive advantage of nations, Macmillan, London, United Kingdom.

Putnam, R., (1995). Bowling alone: America's declining social capital, Journal of Democracy, 6(1), 65-78.

Putnam, R, (1993). Making democracy work: Civic traditions in modern Italy, Princeton University Press, New Jersey, USA:

Pressman, R., (2004). Software engineering: A practitioner's approach, Fifth Edition, McGraw-Hill, New York, USA.

ProjectAuditors, LCC (2005). URL: http:/www.projectauditors.com/Dictionary/B.html, referred on March 31, 2005.

Rautiainen, K., Lassenius, C., and Sulonen R. (2002). 4CC: A framework for managing software development work, Engineering Management Journal, 14(2), 27-32.

Reinard, J., (1987). The empirical study of the persuasive effects of evidence – the status after fifty years research, Human Communication Research, 15, (1), 3-89

Ritter, T., (2006). Communicating firm competencies: marketing as different levels of translation, Industrial Marketing Management, 35, 1031-1036.

Rumbaugh, J. and Booch, G., (1995). Unified method, Rational Software Corporation, Santa Clara, California, USA.

Ruokolainen, J., (2008). How to build the first customer reference to support the growth of a start-up software technology company: an iterative market entry through several sequential customer cases, European Journal of Innovation Management (accepted for publication), 11(2),282-305

Ruokolainen, J., (2007a). How to build the first customer reference to support the growth of a start-up software technology company: an iterative market entry through several sequential customer cases, competitive paper, In: 23rd Industrial Marketing and Purchasing Conference, Manchester Business School, 29th of August - 1st of September, Manchester, United Kingdom, peer reviewed conference.

Ruokolainen, J. and Mäkelä, M., (2005). How to build the first customer reference to support the growth of a start-up software technology company: A longitudinal case study in the business-to-business market in Thailand, work-in-progress paper, In: 2nd Industrial Marketing and Purchasing Asia Conference, 11th -14th of December, Phuket, Thailand, peer reviewed conference.

Ruokolainen, J., Kauranen, I. and Igel, B., (2005). T.J.S. Consultants' first customer references – a teaching case for IT firms entering business, (includes teaching case and teaching notes), Management Case Study Journal 5(2), 51-68

Ruokolainen, J., (2007b). The qualitative use of a customer reference in marketing in start-up technology companies – a constructive study, In: 2nd International Conference on Business Market Management, Delft University of Technology, Delft, Netherlands, 25th – 27th of February, peer reviewed conference.

Ruokolainen, J. and Mäkelä, M., (2006). Employing the First Customer Reference to Support the Marketing of Software Products: An Analysis Based on Quantitative and Qualitative Evidence, competitive paper, In: 22nd Annual Industrial Marketing and Purchasing Conference, University Bocconi, 7th - 9th of September, Milan, Italy, peer reviewed conference.

Ruokolainen, J., (2003). The usage of the first customer reference for starting the complex software business – lessons learned in the Thai Software Industry, work-in-progress paper, In: 19th Annual Industrial Marketing and Purchasing Conference, University of Lugano, 4th – 6th of September, Lugano, Switzerland, peer reviewed conference.

Ruokolainen, J. and Mäkelä, M., (2007). Constructing a market domain model for start-up technology companies: a case example from software business, Journal of Engineering and Technology Management, 24(3), 186-202.

Ruokolainen, J., (2005b). Key concepts for building customer references - creation of a domain model for start-up technology companies, competitive paper, In: 21st Annual Industrial Marketing and Purchasing Conference, Erasmus University, 1st - 3rd of September, Rotterdam, Netherlands, peer reviewed conference.

Ruokolainen, J., (2005a). Gear up your software start-up company by the first reference customer – nomothetic research study in the Thai Software Industry. Technovation, 25(2), 135-144.

Ruokolainen, J. and Igel, B., (2004). The factors of making the first successful customer reference to leverage the business of a start-up software company-multiple case study in the Thai Software Industry, Technovation, 24(9), 673-681.

Salminen, R.,(1997). Role of references in international industrial marketing: A theory-building case study about supplier's processes of utilizing references, Doctoral dissertation, Lappeenranta University of Technology, Lappeenranta, Finland.

Salminen, R., (2001). Success factors of a reference visit – a single case study, The Journal of Business & Industrial Marketing, 16(6), 487- 507.

Salminen, R and Möller, K., (2004). Use of references in industrial bidding – a decision process analysis, Journal of Marketing Management, 20, 133-155.

Shanklin, W., and Ryan, J., (1987). Essentials of marketing high technology, Lexington Books, Lexington, Massachusetts, USA.

Shaw, J., Giglierano, J., and Kallis, J., (1989). Marketing Complex Technical Products: The Importance of Intangible Attributes. Industrial Marketing Management 18, 3-28.

Sheth, J. and Ram, S., (1987). Bringing Innovation to Market, John Wiley and Sons, New York, New York,USA.

Slatter, S., (1992). Gambling on growth, London Business School, John Wiley and Sons, New York, New York, USA.

Sommerville, I., (2004). Software Engineering, Seventh Edition, Pearson Education, Addison-Wesley, Massachusetts, USA.

Spekman, R., (1988). Strategic supplier selection, Understanding long-term buyer relationship, Business Horizons, 3 (July-August).

Tabachnick, B. and Fidell, L., (2000). Using multivariate statistics 4th edition, Allyn and Bacon, Boston, Massachusetts, USA.

Thailand ICT Indicators 2005, (2005). National Electronics and Computer Technology Center, Bangkok, Thailand

Thailand Official Software Directory 1999-2000, (1999). Software Park of Thailand, Bangkok, Thailand

The New Oxford Dictionary of English (2001). Encyclopedia Britannica 2001, Oxford University Press, Oxford, United Kingdom.

Tsai, W. and Ghoshal, S., (1998). Social capital and value creation: An empirical study of intra-firm networks, Academy of Management Journal, 41(4), 464-476.

Urban, G. and von Hippel, E. (1988). Lead user analysis for the development of new industrial products. Management Science, May, 34(5), 569-582.

Uusitalo, O. (1998). The impact of the changes in the customer's industry on the role of the reference in international industrial markets – the case of the batch plants for flat glass industry, working-in-progress paper, In: 14th Industrial Marketing Purchasing Conference, 4th - 6th of September, Turku, Finland.

Wikipedia, (2006), URL: http://en.wikipedia.org/wiki/Entrepreneur, referred on 16th of November, 2006.

Wikipedia, (2007), URL: http://en.wikipedia.org/wiki/Economy_of_Thailand, referred on 20th of August, 2007.

Wikipedia, (2008), URL: http://en.wikipedia.org/wiki/Asian_financial_crisis, referred on 14th of June, 2008.

Wilkinson, I. and Bernett, N., (1987). In search of excellence in exporting: An analysis of the 1986 Australian export award winners, Austrade, Australian Trade Commission.

Wilkinson, I., Young., L. and Freytag, P., (2005). Business mating: Who chooses and who gets chosen? Industrial Marketing Management, 34, 669-680.

Wordnet, Princeton University, Cognitive Science Laboratory, URL: http://www.cogsci.princeton.edu/cgi-bin/webwn, referred on 7th of December, 2004.

Yin, R., (1989). Case study research: design and methods, Sage Publications, Thousand Oaks, California, USA.

Yin, R., (1994). Case study research: design and methods, Applied social research methods series, Sage Publications, Thousand Oaks, California, USA

Yli-Renko, H., (1999). Dependence, social capital, and learning in key customer relationships: effects on the performance of technology-based new firms, Acta Polytechnica Scandinavica, Espoo, Finland.