Employing the First Customer Reference to Support Software Marketing: Complementary methods to analyze empirical evidence

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Abstract

The first customer may provide an important customer reference for a start-up technology company. The first customer reference is likely to be particularly important for companies that produce complex software products for the business-to-business market. The literature was studied to increase understanding of the technology market and start-up technology companies' entry to the market. Connections to the Uppsala Model were created. The first customer reference is important not only in regard to testing the product's quality and usefulness, but also for verifying and developing the business concept: the sales arguments, the business logic underlying the product, and support functions. Complementary research methods, triangulation, were used to augment the reliability of the results. The results of this present research propose that the entrepreneurs' orientation, which seems support entering the market, is partly dependent on the educational attainment. It also appears that companies that make an effort to find sales arguments grow faster than those that use the first customer reference for verifying the technology. Yet, according to our results, only a few start-up technology companies use the first customer reference to find sales arguments. Instead, 40 percent of the companies use the first customer reference for verifying the quality of the technology. A model for explaining the growth of the start-up technology companies with the help of a customer reference is proposed.

Keywords: First customer reference; start-up software business; high technology markets.

Introduction

Positive results from work done with a customer may be used as a reference to convince the next customer. The first customer reference can be a critical tool for a start-up technology company to gain trust in the market. Customer references may be particularly important for companies working with complex products and with sophisticated customers, such as the corporate customer in the business-to-business market. In such a business market, the importance of having a positive first customer reference can exceed the importance of the innovativeness of the product. A customer can value a good reference more than other factors, such as low price or advanced technology.

The start-up technology supplier with a new complex product definitely represents a risk for a corporate customer. Complex software systems, such as Production Planning Systems, can be vital for the customers; the failures in the system can lead to the loss of revenue. Start-up software companies can find it very difficult to convince the first customer to buy the system because of lack of evidence in the form of the customer references.

The first customer reference works to verify not only the product, but also the entire business concept including support, marketing, and other operations. In addition, the business concept and the product might be improved significantly during the implementation of the complex software, which usually takes place through customer projects of various sizes.

Given the importance of the first customer reference for future business, it would be worth while studying the subject in some detail such as in this present article. One can start by asking that what makes the first customer reference case successful or unsuccessful. The main goal of this present research is to find the key factors leading to a successful start or failure of a start-up technology company by using the first customer reference. Thus, our main research questions are:

(1) Which factors affect the success or failure of making use of the first customer reference for further business?

(2) What is their meaning in terms of getting more sales?

This present research has focused on investigating the start-up phases of certain Thai companies that design and produce complex software systems for customers that are also businesses. The Thai software industry has evolved strongly in recent years and its importance has been recognized in developing the society and industry in Thailand.

The next chapter briefly reviews the relevant literature. The methodologies and information collection methods used are then presented. After that, the results are reported. Finally, the discussion and conclusions are presented.

Literature review

Technology market from start-up technology companies' point of view

According to several authors (Moriarty and Kosnik 1989; Beard & Easingwood 1996) the high technology market is characterized as skeptical, uncertain, volatile, and fast moving. In addition, buyers tend to cancel and postpone deliveries and therefore a high risk level of obsolescence of end products must be faced (Shanklin and Ryan 1987). On the top of this, the increasing complexity of the products creates barriers for customer adoption of the new technology (Sheth and Ram 1987).

Entrepreneurship research indicates that more than 40 percent of start-up companies have problems with marketing (Huang and Brown 1999). In addition, the research also shows that the managing directors of start-up technology companies tend to focus on solving technological problems at the expense of commercialization (Freel 1998). Freel suggests that the characteristics of the entrepreneur might affect the success of the business. Actually, Freeser and Willard (1990) stated that market opportunities might occur too quickly for those who have no prior knowledge about the particular business sector. In addition, entrepreneurs with a high level of education are assumed to be more competent at creating relationships with customers and stakeholders (Hannan and Freeman 1989).

It has been demonstrated that the entire product business concept including sales, account management, and product support creates together important aspects of the business success in the high technology market (Shaw et al 1989). In fact, the requirements for selling the entire business concept, instead of just the product, lead to a situation where relationships in multiple levels are needed to ensure effective communication. This extensive communication between buyers and sellers is called the multiheaded customer and seller concept (Gummesson 1987). Actually, such an approach indicates that start-up technology companies should also focus not just on creating a product but an entire business concept.

The partnership theory emphasizes the meaning of long-term cooperation, an open and honest relationship and mutual commitment (Keough 1993; Spekman 1988; Asmus and Griffin 1993). Longer-term and more profound cooperation leads to a situation, in which it would be difficult for a new player to intervene in the existing cooperative arrangements. Therefore, start-up technology companies might face additional challenges in finding the first customer. Opportunities usually open up in the discontinuity of current technology or business relationships.

The partnership theory also emphasizes the win-win situation that contradicts traditional purchasing practices: using competition to knock down the prices and delivery terms (Spekman 1988). In the past, the competition and an arms-length approach were believed to help obtain the best price, delivery, and quality terms (Spekman 1988). The win-win situation can be achieved, for example, in a situation, in which the customer has the opportunity to obtain

something from a start-up technology company that does not yet exist on the market, and the start-up technology company gets positive arguments to help in enter the market with its new product and company.

It can be argued that the high technology market is especially difficult for the start-up technology companies that do not have a customer reference that they could use to dispel the uncertainty about their product and business concept. Definitely the start-up technology companies can form a risk for the first reference customer since it uses new technology, and it has little or no business experience. The changing purchasing practices indicate also that the start-up technology companies might have problems in finding customers in an open market. The existing relationships might be difficult to intervene if a supplier and a buyer work together in partnership.

The dilemma of start-up technology companies is to convince the first reference customer to purchase the product although the start-up technology company has had no opportunity to prove the product functions in real life. This dilemma may be one of the main problems that make it difficult for a start-up technology company to enter the market.

Start-up technology companies' entry to market

The way to open the customers' doors for a start-up technology companies is to use existing contacts. It can also be assumed that those who have a relationship with a customer may have a better chance of succeeding in entering the market. Some research has found that social capital has a key role in setting-up a start-up company (Aldrich and Zimmer 1986; Otsgaard and Birley 1994). Start-up companies can use the existing contacts of the owners to find customers or to obtain venture capital financing (Birley 1995; Eisenhardt and Schoonhoven, 1996).

The studies also indicate that the start-up technology companies tend not to take the necessary actions to start marketing their new products. Autio (1995a) noted that empirical studies suggest that rapid organic growth is both rare and often even unwanted among new, technology-based firms. The real reason behind this might be that the high technology market is difficult to access as described earlier by several authors (e.g. Beard and Easingwood 1992; Beard, 1995). This, together with the fact that entrepreneurs often have no marketing education, might create the situation described by Autio (1995a) and Freel (1998). The remedy to the situation could be to increase the marketing and sales knowledge among the start-up technology companies.

The lead user methodology of the involvement of the key customer in the R&D process has been reported to positively affect the success of the product (Herstatt and von Hippel 1992; Urban and von Hippel 1988). However, some of the research has not supported this. In fact, the customer's involvement has been criticized as limiting the innovativeness of the R&D function (Bidault and Cummings 1994; Johne 1994). This is because the customers' proposals represent incremental improvements to the existing situation rather than radical changes. In addition, the strong involvement of the customer might also lead to a situation in which the start-up

technology company ends up in the role of a subcontractor – and not developing the product for a large market. Even problems with intellectual property rights (IPRs) have been reported (Bruce et al, 1995): customers, in some of cases, tend not to give the IPRs of the product to the start-up companies and claim they own the rights. This can, at worst, lead to the bankruptcy of the start-up company.

The companies' expansion to a foreign market can be regarded to be similar in some extent to the start-up technology companies' entry to a local market. In both cases the markets are new and can be unknown to both types of companies. The both type of companies might neither have reputation nor credibility required by the new markets. The companies planning to expand to foreign markets have the knowledge and experience of taking their product into the local market. The start-up technology companies do not have that benefit.

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

The firm-based experience can only be gained through the operations of that firm. Therefore, start-up technology companies usually do not have the firm-based experience. It might also be that the social capital is more important for gaining the first customer reference than the market-based knowledge. The market knowledge can be attained by hiring people who have it. However, Leonidou and Katsikeas (1996) stated that the market information can be accessed neither easily nor inexpensively.

The market commitment is composed of allocated resources and the commitment degree of the resources. The commitment degree of the resources is related to how specific the resources are for the market. The commitment to the resources can also be considered as an investment to a specific market. The difference to start-up technology companies is that they might not possess the required assets and resources in comparison to the companies that plan on expanding their operation abroad. The companies which are planning to expand abroad 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 the knowledge in two classes namely objective and experimental knowledge. Objective knowledge can be gained through education. The authors emphasize the meaning of experimental knowledge, which is learnt through personal experience. Over time the companies can reduce the uncertainty and gain business opportunities by increasing experience and learning more. Johanson and Vahnle state (1977) that the way to gain practical knowledge is to set-up business operations abroad.

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

Conclusion

Most of the market-related studies have been conducted of companies that have long since passed their start-up phase; marketing strategies of the start-up technology companies have received comparative little attention in the literature. Beard and Easingwood (1996) found that the commercialization stage is often neglected in the literature on new product development, innovation, and high technology marketing.

The focus in this present research is on how to build the first customer reference to support the growth of the start-up technology company. The first customer reference can be assumed to be especially important for the start-up technology companies, which try to enter the business-to-business market with complex products. Salminen (1996) argues that the customer reference has not been widely studied in the market. The first customer reference might test not only the product, but also the entire business concept.

Johanson and Vahlne (1977) created the Uppsala model for companies that plan to expand their operations abroad. The Uppsala model might not be applicable as such for investigating start-up technology companies' entry to a market. However, the model has interesting elements and these could be used for researching start-up technology companies' entry to the market. The model emphasizes gaining practical experience and knowledge through operations. Building the first customer reference can be considered one of the instances of setting-up operations. The purpose of the customer reference is to support the search for business opportunities, which rationale is also emphasized by the Uppsala model. It is interesting to study how these elements and other elements highlighted by the literature are applicable in building the first customer references.

Being comparatively sparse, the literature does not provide a strong base for doing nomothetic research into this subject. Therefore, it was decided to use the inductive multiple case research approach in this research supporting it with complementary data collection and analyses methods. Some early factors were already identified in this phase (Eisenhardt, 1989). These are :

(1) The skill set of the entrepreneur: Some entrepreneurship research suggests that the personal characteristics of entrepreneurs play an important role in supporting or preventing the successful market entry of the start-up technology companies. The characteristics of the

entrepreneur can be related to the background of the entrepreneur including both the educational attainment and work experience.

(2) Social capital: The relationship theory does not indicate how, when, or what kind of social capital is needed for building the first customer reference. However, social capital is likely to play an important role and more detailed research into its role is warranted.

(3) Commitment: The Uppsala model proposes the importance of the commitment of the supplier for the market. On the other hand, the research concerning the lead user design methodology and partnership theory emphasizes the commitment of the customer to the business of its partner. More research is needed to obtain a better understanding of the subject in this present research context.

(4) Learning from the first customer reference: The meaning of gaining experimental knowledge through operations is emphasized by the Uppsala Model. The operation can mean start-up technology companies' activities with the first customer references.

(5) Marketing value of the first reference customer: In a literature reference, it was recommended that big customers should be used as a reference (Beard and Easingwood 1996). The idea behind recommendation might be that the bigger companies are more valuable in marketing than smaller companies. It can be asked if there are other customer characteristics, which make the customer valuable from the marketing perspective.

Data and methods

The use of different research methods can increase the reliability of the results, if the methods do not share the same source of systematic error. This present research employs three complementary research methods to investigate the subject. Such a research approach of using several methods is called triangulation in the literature. Triangulation is recommended to be used in social science by several researchers, for example, 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.

Because the topic of this present research has not been widely studied, the nature of this present research is inductive. We use the inductive multiple case study methodology, complemented by statistical analyses and a longitudinal case study. The data for this present research was collected in interviews. The three studies of the present research were executed in sequential order: first the inductive multiple case study was done to find the factors (Ruokolainen and Igel 2004); the survey with statistical analyses was used to gain a better understanding of the factors (Ruokolainen 2004); and their relations, and finally the longitudinal study of a single case including several embedded cases was used to illustrate complex multi-variable model in real world (Ruokolainen et al. 2005).

Sample selection. The companies for the three studies of this present research were selected with the help of Software Park. Software Park is an organization of the Thai government that has a database of Thailand's software companies including more than 200 names with the aim of promoting the Thai software industry. Another purpose of the Software Park is to maintain a database of Thai software companies for different interest groups, such as the Thai government and foreign and local investors.

The target population of this present research consists of Thai companies that produce large and complex software systems for the business-to-business market. The construction of the systems could take a long time, typically several years, by a group of people. All the software companies, which could be matched with the criteria described above, were selected to form the base sample.

The size of the base sample for the three studies consists of thirty companies, from which several companies were interviewed more than once. Figure 1 introduces how the frequencies of interviews are distributed among the sample companies. It can be assumed that the samples, the companies investigated, allowed the use of statistical tools, which are based on random deviation.

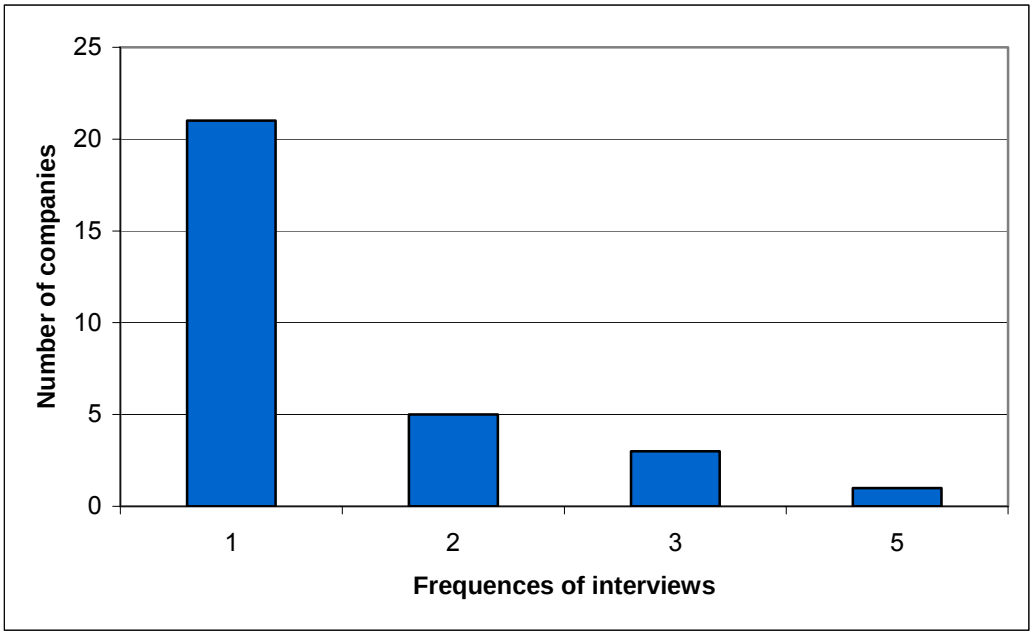

Figure 1: Frequencies of interviews versus number of companies

The period to be investigated by this present research was the first four years of the companies. All the software companies studied were entrepreneurial in their start-up phase. The data was collected for that period from the sample companies. The interviews seldom concentrate on the current situation. All the companies had existed for several years at the time of interviews and so had succeeded in entering the market. Two of the companies are known to have stopped operations at the time of writing this article.

Using the inductive case study methodology with multiple cases. In the first study, the inductive research approach was used for building a basic conceptual framework from multiple cases (Eisenhardt 1989). Nine different Thai software companies were studied to learn how they have fared in expanding the business in the start-up phase. A list of questions was formed to guide the interviewers. Usually three interviewers attended the meetings, which typically lasted for several hours. Most of the interviews were taped. After the interviews, the records of the participants were compared. The empirical material was analyzed by conducting within-case and cross-case analyses (Eisenhardt 1989).

Using the survey methodology with statistical analyses. In the second study, the survey methodology was used to gather data for quantitative analysis regarding the variables identified in the inductive multiple case study research. The linear correlation analysis has been used to find the relationship between a single variable and the sales growth. The investigated system is a multivariate system, and therefore, the linear regression analysis has also been used to study the relationship of a number of variables with sales growth. Tabachnick and Fidel (2000) write that the correlation is usually used when the purpose is to assess the relationships between dependent and independent variables; and the regression is used when the intent is prediction.

In some cases, the binominal distribution has been used to check if certain observations could be regarded as random events; and if the linear correlation could not be used. If the binomial distribution of the answer equals the random distribution then the result cannot be generalised. The binominal contingency higher than 0.05 ($p>0.05$) was used to ignore the generalisation, that is, there would be more than 5 % chance that the same result could have been arrived at accidentally.

The questionnaire was developed and tested first with the help of three sample companies before carrying out the survey. The responses were acquired in interviews. In some cases, a Thai person was needed to translate from Thai to English. The questionnaires were sent beforehand to the target companies. The meetings were arranged with the entrepreneurs (owners or founders) of the companies. During the interviews, background information was gathered to support each questionnaire.

Using a longitudinal case study for illustration. The results of the above studies were illustrated by using a longitudinal single case study (see Yin 1989). The purpose of the single study case study is to anchor the result of a complicated multivariate system to a single real company case. Researchers at Asian and European universities gathered the first information relating to the company already in the mid-1990s as a part of a large survey of the Thai technology companies. The follow-up study was conducted in the late 1990s. The owner, employees, competitors and one of the potential customers were interviewed several times between 2000 and 2004.

Review of the results of the studies

Background information

Descriptive Statistics. This present research has focused on the first years of the software technology companies – their start-up phase. The ages of the investigated companies varied quite considerably. The average age of the companies was 7.1 years. The oldest company was 30 years old and some of the companies were established as late as 2000. The entrepreneurs of the oldest companies remembered well the events relating to their first customer. Over 40 percent of the investigated entrepreneurs recognized the importance of the first customer reference for their business development over the other options, which related to setting-up a management team and gaining educational degrees and experiences before starting their company.

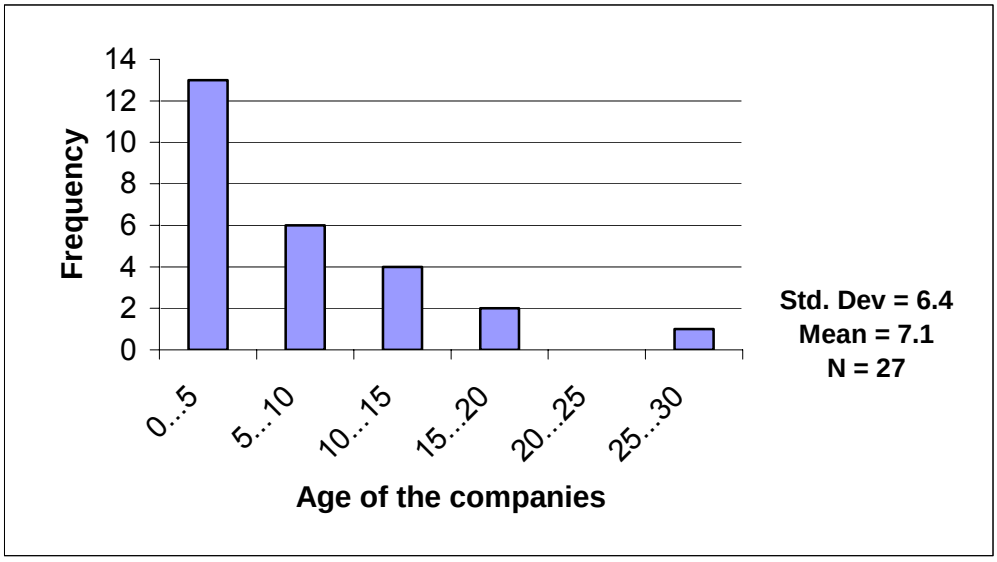

Figure 2: The age distribution of the sample companies

The sales information was collected from the start-up software companies up to the fourth year. In a few cases the companies had existed less than four years. In order to make the growth figures comparable an 'Annual sales increase' indicator was created by linearly approximating annual sales data. The Annual sales increase indicator describes how much a start-up company should linearly grow annually in order to reach the sales figure of the fourth year or the latest available sales figure if the company was less than four years old.

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 also non-existent. Also one of the companies differs quite strongly in growth compared with the other companies: after the third year, its sales growth dramatically exceeds the others. This case is classified as an outliner. This company is not included in the analysis. The companies with missing sales data could not be used in the correlation and the 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.

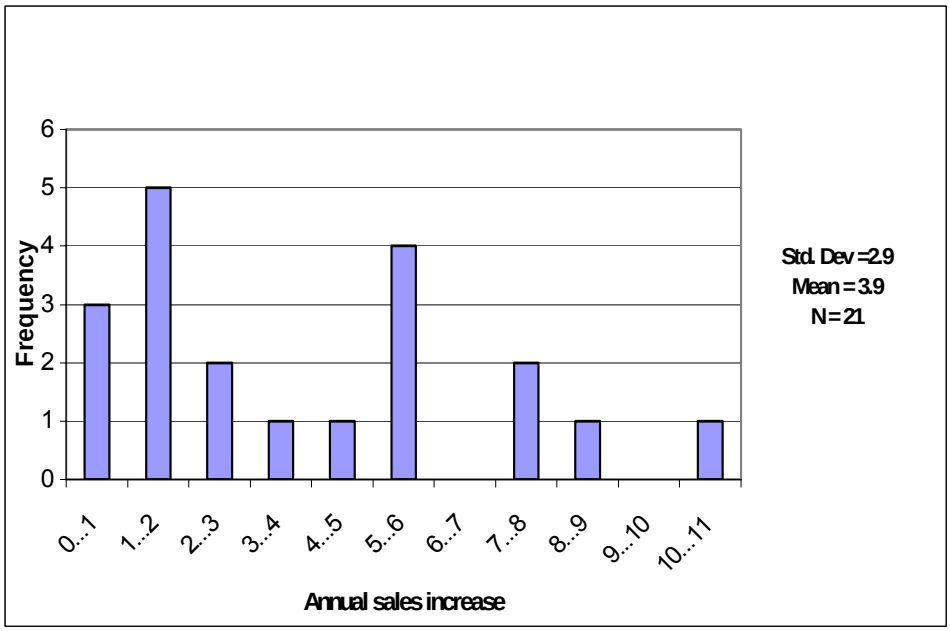

Figure 3: The Annual Sales Increase of the companies (million bahts/year)

The number of companies in the survey 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 the economic downturn. Opposite examples can also be found.

Background for longitudinal case study company. The longitudinal case study company was founded in the mid-1980s in Thailand. The company produces complex software systems for human resource management mainly for companies operating in Thailand since the beginning of the 1990s. In the start-up phase, the company was looking for a focus in its business by carrying out three different "first reference cases" one after the other before the business took off. In other words, three cases of using the first reference were studied in a single longitudinal case study. These three cases are as follows: Swine Farm Management case, First Human Resource Management case and Second Human Resource Management case. The entrepreneur had a doctoral degree in chemical engineering from the USA. She worked as a programmer for an international oil company and later as the head of department in another company before setting up her own company.

Using the inductive multiple case to identify the basic conceptual framework. First the periodization (Jessop 1990) of case studies was done to determine the independent factors, outputs. Three different sequential periods concerning the building of the first customer reference were identified with the help of the nine case studies (see Figure 4). All three periods need to be passed in order to successfully build the first customer reference. (1) The first customer reference must be found. (2) The system must be implemented. (3) And the business is to be expanded by using the customer reference. The main output, the main dependent factor, is the expansion of the business, which can be measured by the growth related variable (Period 3). The success of Period 1 can be measured by finding out if the start-up technology

company has found the first customer reference. The success of Period 2 can be measured by finding out if the system was implemented successfully for the first reference customer.

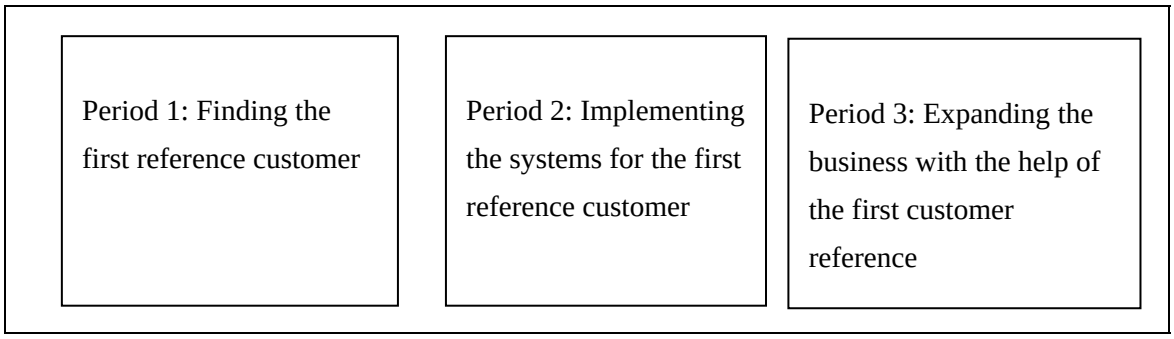

Figure 4: Periodisation of the cases studies and the outcomes of each of the periods

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, inputs, which are also results from the multiple case research. The following factors and elements for independent variables were identified concerning the three periods:

1. Social capital: five out of the nine cases found their first customer reference mainly based on past social contacts. Various types of contacts were detected. The multiple case study was able to point out that social capital could play an important role especially in finding the first customer in Period 1.

2. Background of an entrepreneur: The inductive multiple case study proposed that work experience could help an entrepreneur succeed with the implementation of the first customer reference case in Period 2. Work experience in international enterprises, in particular, seems to have a positive effect on the capability of the entrepreneurs. The entrepreneurs' educational attainment was also studied and it seems to affect Period 2 positively. In addition, the literature proposed that the previous work experience and the educational attainment affect Period 3.

3. Commitment of the first customer reference: The inductive multiple case study stated that the commitment of the customer could affect both of the two last periods – succeeding in the implementation and expanding the business. Various types of commitments were found: cost can be shared, resources could be allocated by a customer, advice could be given by a customer etc. Intellectual Property Rights seemed to be an issue in a few cases (2/9).

4. Learning from the first customer reference: According to the multiple case study, with the help of the first customer reference, the start-up software company could test and learn things, which might be important in expanding the business (Period 3). Learning business-related things seemed to mean more sales.

5. Marketing value of the first reference customer: It was suggested that the marketing value of the first reference customer affected the last period, expanding the business. The literature recommended using only large reference sites (Beard and Easignwood 1996; Slatter 1992). The multiple case study pointed out that if the first customer belonged to a key industrial sector of the country, it could enhance the success.

These factors form the context, in which the basic conceptual frame is assumed to work. It forms the base to investigate the factors from the point of view of the different researches. A predictive model can be synthesized by combing the outputs of the periods, dependent variables, with related the inputs, independent variables based on the factors. Each independent variable affects one or more dependent variables of the periods. The independent variables form a mechanism to achieve the outcomes of each period in the context described.

Analysis of single variables

In the next sections the analysis of each single variable will be introduced by reviewing the effect of each variable on the sales growth. Each factor and related variable will be presented from the perspective of each separate research (inductive multiple case study, survey and longitudinal case study). The variables in Table 1 are investigated.

The companies of the base sample had already existed several years at the time they were interviewed and therefore all companies had found their first reference customers and succeeded in implementing their complex systems. Instead of searching for correlations the other approach was selected in order to investigate the success in these first two phases. Binominal distribution was used for investigating the answers of the survey to study the existence of the contingency. The last period for expanding the business could be studied by using correlation and regression analysis.

Table 1 : The variables to be investigated

Factor:	Variable:	Description:
Social capital	Previous social contacts	If previous social contacts existed to the first reference customer prior to gaining the first customer reference
Learning	Business logic	If the first customer reference was used for learning the business logic.
	Correct technology	If the first customer reference was used for learning the correct technology
	Profitable Business	If the first customer reference was used for learning how to make profitable business
	Sales arguments	If the first customer reference was used for learning sales arguments
	Run projects	If the first customer reference was used for learning running product related projects
Customer's Commitment	Costs shared	If the development and/or implementation costs were shared between start-up technology company and the first reference customer
	Development paid	If the first reference customer paid the development costs of the product
	Advice given	If the first reference customer supported implementation by giving advice
	Resources allocated	If the first reference customer allocated resources for implementation
Background of the entrepreneur	Educational attainment	PhD, MBA, M.Sc, B.Sc, no attainment
	No previous work experience	If previous work experience existed prior to setting up the start-up technology company
	Work experience in international company	If previous work experience existed from an international company prior to setting up the start-up technology company
Marketing value of the first reference customer	Large enterprise	If the first reference customer was a big enterprise
	Key industrial sector	If the first reference customer belonged to the key industrial sector of the country
	Age of the company	If first reference customer has existed more than 10 years

Social capital in finding the first customer reference

Inductive multiple case study: In the multiple case study all of the entrepreneurs reported having difficulty in finding the first customer reference. The literature also shows the skepticism of the high technology market (Shanklin and Ryan 1987). The customer can regard a start-up company's new complex software product as having a high risk. Many, five out of nine, of the start-up software companies seemed to overcome this problem by using the social contacts that they had gained over the years. Granovetter (1973) reports a similar phenomenon in the labor market calling it "the strength of the weak ties". The multiple case study suggests that the first customer was found through various social channels: friends, friend's friend, ex-employers, etc. Contacts with the previous employers seemed to be an important source for getting the first customer reference.

Survey: The survey partly confirmed the assumptions of the multiple case study research. In the survey about 70% of the 27 start-up software companies had previous contacts with their first reference customers. The result can be generalized over a large population according to

the binominal distribution (contingency ≤ 0.05). This survey could not confirm the importance of the contacts with the previous employer. It was not possible to state whether a certain type of previous contact was more important than the others. In this present research study, the answers were distributed quite equally between the 10 different options given to the respondents.

Longitudinal case study: The longitudinal case study demonstrates the previous results. In the first case, the Swine Farm Management case, the entrepreneur had the right contact to get the first customer. A long-term school friend of hers provided the business opportunity for her start-up software company. In the second case, the first Human Resource Management case, the customer was found through old university contacts. Her former student colleague asked her to make a presentation for the customer project. In the third case, the second Human Resource case, finding the real customer reference turned out to be difficult. The case study company had no relationships with suitable customers.

Learning from the first customer reference

Inductive multiple case study: The multiple case study shows that the investigated start-up software companies learn several things about business development using the first customer reference. The companies reported that they use the first customer reference to learn sales arguments, business logic of the product, how to run projects, and how to use the technology. Several entrepreneurs said that the important thing for them was to learn the business logic, that is, how the software was to be integrated into the business processes.

Survey: The survey proposes that the variable relating to learning 'correct technology' does not correlate with sales growth. In fact, it correlates negatively with it (-0.52*). This result is also illustrated by calculating the average sales growth of the companies under the different learning categories (see Table 2). However, nearly half of the companies use the first reference to verify the technology – especially the maturity of the technology.

Instead, the variable relating to learning the 'sales arguments' seems to correlate with growth (0.55*). Those companies, which have learned sales arguments, grow on average faster than the other sample companies as described in Table 2. The sales argument usually means benefits that the software system could 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 considering the business model of the customer.

In several cases the companies reported they learnt how to run customer projects. However, the variable relating to learning how to run projects did not correlate with growth. Neither did the other variables relating to learning, namely 'Business logic' and 'Profitable businesses'.

Table 2: The average sales growth of the sample companies under different 'learning' categories (million bahts / year) and related correlations with sales growth (* p ≤ 0.05; 2-tailed tests).

Grouping by the answers:	All Sample Companies	Profitable business	Sales arguments	Business logic	Run projects	Correct technology
Average Annual sales increase	3.9	4.4	5.24	3.71	3.56	1.73
Standard deviation	2.88	2.65	3.20	2.54	2.74	1.37
Correlation	-	0.11	0.55*	-0.13	-0.04	-0.52*

Longitudinal case study: The longitudinal case study emphasizes the importance of the use of the first customer for learning the business practices. The case study company focused on building a required system in the Swine Farm Management case. The entrepreneur explained that they gained system definition skills. The company paid little attention to finding the sales arguments to help sell the system further. In fact, the case failed because the size of the Thai market was wrongly estimated.

During the first Human Resource Management customer case, the company clearly lacked many of the skills, which would have been needed to produce the complete Human Resource Management software system. There was no customer's requirement management in place. There were insufficient technical skills. Project management skills were also not at the level required to manage this size of a project. The conclusion can be drawn that much of the time was spent solving technical issues.

In the second Human Resource Management customer case, unskilled resources and lack of project management know-how did not cause problems as in the previous case, in which the lacking skills were partly learned. The entrepreneur of the case study company mentioned that she had to work out the sales arguments before this second customer was convinced to buy the system at half price.

Commitment of the first reference customer

Inductive multiple case study: According to the multiple case study, the lack of commitment of the customer was one of the reasons for the start-up software company's failure with the first customer reference. The multiple case study also points out that the first customer interest may not meet the business needs of the start-up software company. The customer might use a small supplier just to verify the technology and to gain Intellectual Property Rights, for example, to prevent the development of a competing technology. According to the multiple case study, the first reference customers could commit to the start-up software company by paying for the development, sharing the cost, allocating resources, and giving advice.

Survey: Those start-up software companies, which shared the cost with the first reference customer, seemed to grow on average faster than all the sample companies (see Table 3). The

correlation between the variable Cost shared and sales growth is 0.54*. This result might also reflect the problems relating to the Intellectual Property Rights. If the costs are shared, the ownership of the Intellectual Property Rights of the start-up technology companies might be clearer. 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 what comes to the business benefits of the investment. According to the survey the other types of customer commitment did not correlate with the growth.

Table 3: The average sales growth of the sample companies under the different 'commitment' categories (in million bahts / year) and related correlations with sales growth (* $p \leq 0.05$; 2-tailed tests).

Grouping by the answers:	All Samples Companies	Resources allocated	Development paid	Cost shared	Advice given
Average Annual Sales increase	3.9	3.07	3.15	6.14	3.88
Standard deviation	2.81	2.30	2.86	3.28	2.66
Correlation	-	-0.19	-0.28	0.54*	-0.11

Longitudinal case study: The longitudinal case study also seems to support both the multiple case study and the survey. The customer of the Swine Farm Management case was a close friend of the entrepreneur and probably, therefore, the customer was committed to the business of the case study company: the customer was ready to share the knowledge and help the start-up software company develop the first version of the software by letting it be tested on her farm.

The customer of the first Human Resource Management case approached the subcontractor, the case study company, with the traditional purchasing strategy. The interest of the customer seemed to be to squeeze the subcontractor with the price. The customer also paid the development, and after not reaching agreement on the Intellectual Property Rights the case study company was not allowed to use the case as a customer reference.

Probably because the case study company gave significant discounts to the new pilot customer of the second Human Resource Management case, the ownership of the Intellectual Property Rights played no role in the relationship. The commitment of this customer to the business of the case company exceeded the commitment of the customer of the previous case.

Background of the entrepreneur

Inductive multiple case study: According to the multiple case study, all the entrepreneurs had previous work experience before starting their own company. Based on the study, the work experience of the entrepreneurs in an international enterprise could possibly lead to better success than a domestic background in implementing the first customer reference. International

companies usually developed methodologies and standard procedures to guarantee successful implementation of their complex system. In the sample companies of the multiple case study, many of the software entrepreneurs had a university education.

Survey: The survey shows that nearly 87 percent of the entrepreneurs of the sample companies had work experience before starting their own company. The result can be generalized to a large population (binominal contingency less than 0.01). Many of the entrepreneurs had previously worked in international companies like Siemens, Microsoft, IBM, etc. The survey did not support the proposition that the entrepreneurs' international work experience is related to better performance. There were no statistically significant differences between international and local work experience among the successfully implemented first customer reference cases. The international work experience of the entrepreneurs correlated positively with sales growth (0.21), but the result was not statistically significant.

Rather many of the entrepreneurs had an MBA degree and some even had a doctoral degree. According to the survey the educational attainment of the entrepreneurs correlates positively with the sales growth (0.69**).

Longitudinal case study: The entrepreneur had a product development background. She had a strong understanding of how to work systematically towards a commercial product. The knowledge and experience gained from working for the oil company as a programmer had helped her produce and implement the software packages for the first customers. She had no prior experience in project management and or marketing. This she made up for with her ability to fight for her company. The fact that she has a doctoral degree is, among other things, an indication of her perseverance.

Marketing value of the first reference customer

Inductive multiple case 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 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 the point of view of marketing. Those Thai companies, which had their first customer references from the garment and agriculture sector, grew faster than the other sample companies. The other options, which were proposed to be valuable for marketing, were the size and age of the reference customer.

Survey: The meaning of the marketing value of the first reference customer was evaluated by the survey. In the survey, the marketing value of the first reference customer was not connected to the growth of the start-up software companies. No relationship was found between the two variables, age and size, of the customer and the growth of the business of the start-up software companies. The reference customers, which operate in the key industrial sector, do not correlate the growth of the start-up technology company either. Among the variables used as

indicators of marketing value, this variable had the highest positive correlation (0.16) with sales growth, but none of these variables were not statistically significant.

There were some indications that the big companies might use their reputation to squeeze small start-up software companies, which were ready to trust their counterparts in hopes of getting a customer reference. Start-up technology companies often might not know how to deal with big complicated accounts. This might be a reason why big companies can not provide necessarily optimal references for start-up technology companies.

Longitudinal case study: The longitudinal case study supported the findings of the survey. The first customer, Swine Farm Management Case, of the case study company was one of the largest companies in its sector in Thailand. However, the volume market was not in big farms but rather in small and medium sized farms, which had different requirements for the farm management system. In the first Human Resource Management System, the customer belonged to the key industrial sectors of Thailand and was a large enterprise with a relatively long history in that business sector. The customer could not be used as a reference, because of the problems with the relationship caused by a dispute over the ownership of the Intellectual Property Rights. The customer of the third case, the second Human Resource Management case, was also a large enterprise, but it did not belong to the key industrial sectors of the country.

Results of regression analysis

Those variables that are proposed to be relevant for the growth of the start-up companies are selected for the regression analysis from each variable group (see

Table 1) after careful analysis by complemented methods. The selected variables are listed in Table 4. 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 variable is strongly correlated with the dependent variables but uncorrelated with the independent variables. Table 4 shows the correlations between the variables. Many of the selected independent variables correlate strongly with the dependent variables.

The educational attainment not only correlates with sales growth but also with the variable Correct technology negatively and positively with the Sales arguments. However, multicollinearity seems not to be a problem in regression analysis: The condition index stays well below 15 (Belsley et al. 1980). Eigenvalues do not indicate problems, either. The correlations in question might propose that those who have better education have a tendency to concentrate on finding sales arguments instead of focusing on verifying the technology.

Table 4: Cross correlation table (Pearson correlations)

	Annual Sales Increase	Cost Shared	Correct Technology	Sales Arguments	Key Industrial Sector	Educational Attainment
Annual Sales Increase	1					
N	20					
Cost Shared	.544*	1				
N	20	20				
Correct Technology	-518	-.429	1			
N	20	20	20			
Sales Arguments	.550*	.286	-.429	1		
N	20	20	20	20		
Key Industrial Sector	.153	.016	.016	.016	1	
N	19	19	19	19	19	
Educational Attainment	.687**	.209	-.511*	.525*	.058	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 dependent variable Annual sales increase and independent variables Cost shared, Correct technology, Sales arguments, Key industrial sector and Educational attainment. Analysis was executed using SPSS.

Table 5 shows the unstandardized regression coefficients (***B***), the intercept, the standardized regression coefficients (*B*) and R2 and adjusted R2. R for regression was significantly different from zero F (5, 12) = 8.431, p ≤ 0.001. Two of the independent variables contribute significantly to prediction of the Annual sales Increase namely Cost shared (sr2=0.133) and Educational Attainment (sr2=0.218). The five variables in combination contribute another 0.42 in shared variability. 78 percent of the variability of the Annual Sales Increase is predicted by knowing scores of the five variables. Adjusted R2 is 68 percent.

The above variables seem to some extent to explain the sales growth among the target population. The longitudinal research also seems to support the findings: The owner has an educational attainment from a university, Ph.D. The owner indicates that she also had to produce the sales arguments in order to get the first successful customer reference from the open market. And the customer and the company shared the cost of the first customer reference. Many of the difficulties were caused by inexperienced staff that were unfamiliar with the technology.

Table 5**:** The summary of the Standard Multiple Regression analysis

	B	*B*	sr2
Cost Shared	2.728*	.413	.133
Correct Technology	.853	.136	
Sales Arguments	1.200	.191	
Key Industrial Sector	.766	.096	
Educational Attainment	2.170**	.625	.218

N=18		R2=.778
	Adjusted	R2=0.68
*p ≤ 0.05		R=.882**
**p ≤ 0.01		
	Intercept	= -2.673

Conclusion and discussion

Achieving the objective of this present research

The first objective was to find factors that affect the success or failure in building the first customer reference. Much effort has been expended in finding the variables. The literature was studied and the multiple case study research was carried out. The second objective was to evaluate the meaning of them. The linear correlation and the regression analysis have been carried out to study the meaning of the variables in regard to the sales growth. The longitudinal research illustrated and concretized the results by showing how the complex multivariate system can be reflected in a real life company case. The longitudinal case study supports the results.

This present research has succeeded in synthesizing different literature and research topics into the framework (see Figure 4), which seems to help conceptualize the meaning of the different variables in the success of the start-up technology company. The predictive model can be created by combining the outputs of periods (see Figure 4), dependent variables and with related inputs, independent variables. The variables relating to the last period, expanding the business with the help of the first customer reference, can particularly be used to construct a model, described in Figure 5. The variables alone might not explain the growth but they suggest on what area to concentrate.

We found that these variables explain nearly 70 percent of the sales growth based on the regression analysis. In addition, we evaluated how the variables affect the success or failure of the first customer reference building process. In particular the educational degree and mutual commitment, the variable cost shared, seem to propose growth. However, the five variables in combination also contribute to the growth. The objectives, which were set at the beginning, seem to have been reached.

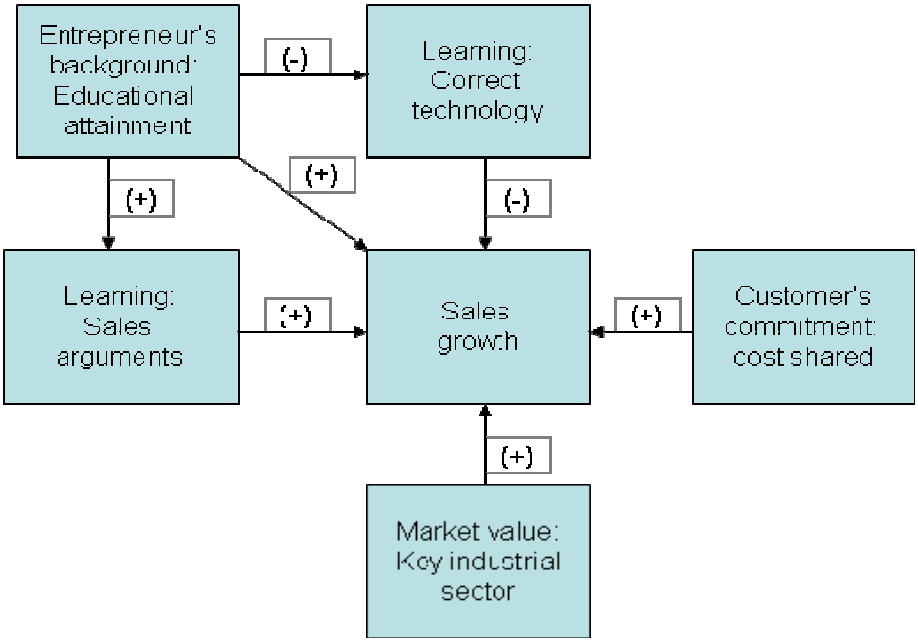

Figure 5: A model for employing customer reference to expand business of a start-up technology company

This present research did not rely on just one methodology. The methodologies chosen seem to complement each other quite well. The inductive multiple case study provided a good foundation of information on the process of building the first customer reference and about variables relating to the phenomenon. The survey helped in studying the variables and in profoundly understanding them. The longitudinal case study enabled the result to be anchored to the real world company case. This makes the research well grounded and interesting to execute from the researcher's point of view.

It should be noticed that in all of the cases except one the entrepreneurs have previous work experience. This present research was unable to prove that previous work experience would indicate further sales. However, it can be proposed that previous work experience is essential for implementing a successful first customer reference, and gaining social contacts, which can be useful in finding the first customer reference, but are less important if the customer references exist.

The size of the sample is quite small but large enough to create some insight on top of the multiple case study. In addition, all the representatives of the sample companies were interviewed even when the questionnaires were used. However, it is not always possible to eliminate distortion when people are used as the primary source of information. The motives of the respondents might often not be well articulated even to themselves (Autio 1995b).

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. The business credibility can be built with the help of the first customer reference.

Comparing the results with the Uppsala Model

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

It can be argued that the first customer reference is obviously the main source for experimental knowledge for a start-up technology company. In particular, there are indications that learning sales specific knowledge proposes growth of the start-up technology companies. The meaning of the experimental knowledge is also emphasized as a means of gaining business opportunities by Johanson and Vahlne (1977). The whole concept of the customer reference has been created for convincing the next potential customer to buy the product from a company in question. There is a strong link between the customer reference and the experimental knowledge in the conceptual level.

This present research highlights the value of the objective knowledge reached through educational attainments. The educational attainments correlate strongly with the sales growths, but they alone do not explain the sales growths according to the regression analysis. The objective knowledge also seems to make positive impacts on building business out of the first customer references**.** It seems to affect the entrepreneurs' focus gaining the experimental knowledge. The educational attainments seem to correlate with learning the sales arguments positively and learning the right technology negatively. This is interesting because according to this present research the educational attainment indicates the right type of orientation of the entrepreneurs to growth from the business perspective.

The Uppsala model emphasizes the commitment of the companies in terms of allocating resources and funding while entering a foreign market. This present research, however, points out that customers' commitment to start-up technology companies business should also be regarded as an important factor. Actually the mutual commitment for each others' businesses is proposed to be necessary for making the business successful. The mutual commitment can happen, for example, by sharing costs in the first customer reference case.

The Uppsala model divides the experience into firm-based experience and market- based experience. The firm-based experience can not exist because the start-up companies are new and have not been able to acquire such knowledge. Nor might the market-based knowledge be easily available for start-up technology companies, which seldom can provide incentives as attractive as those of large enterprises for their sales and marketing staff. Many of the

entrepreneurs of this present research found their first customer by using their previous social contacts.

The observations and results of this present research seem to resemble the Uppsala model in many ways, although the Uppsala model was originally planned for companies entering a foreign market. By taking into account the above comments a new model could be created based on the Uppsala model. The new model could provide a useful framework for explaining the start-up technology companies' entry to the market.

In particular, models that help start-up technology companies enter the global markets could be valuable. Often the local markets are too small for technology companies which produce complicated products for corporate customers. As the Uppsala model states the experimental knowledge is important and if the customer references could provide this , then questions can be raised about the factors affecting entering the global market. Some ideas for future research can be proposed: (1) Those reference customers which operate globally and have a strong enterprise culture for Information Technology systems could provide the basis for internationalization for start-up software companies. (2) The requirements relating to business logic, which is the essential part of the complex software product, can differ from country to country, and therefore the business logic should be easily implemented and well understood by the supplier.

Generalizing the results

This present research was carried out among Thai Software companies that produce complex software systems. Although there are only a few such companies in Thailand, one can assume that they will increase as the economy grows. Statistically the results can be generalized over the future population: it can be stated that their growth path will follow that of the previous ones if there are no changes in technology policy or in the business landscape, which was described by Porter (1990).

It is possible that these results cannot be generalized across the business sectors or cultural environments. The observations of this present research are likely to be country specific to an extent, but we nevertheless believe that they are also valid other regions. National cultural issues may naturally hinder generalization, but we do not believe that our particular focus topics and the associated factors are strongly affected by national cultures.

The need for the first customer reference is not just a business sector or a country specific issue. The first customer references are generally needed in the complex technology business to convince the next customers. Actually, it can be assumed that the first customer reference is needed in many cases when a start-up company is dealing with a customer with a complex issue, for example, a start-up law office might need the first customer reference as much as a start-up company which delivers complex software product.

Managerial recommendations

The entrepreneurs in all the case companies were motivated to find the first customer reference. The motivation consisted of the need for a first customer reference and to gain income to finance the operations of their start-up software company. The start-up technology companies operated in the volatile technology market, in which customer references are required for the complex products.

The results point to there being a specific set of key variables and related practices, which reference-driven start-up companies, such as the companies investigated, should apply to avoid the critical points and to get the most out of the first customer reference: (1) This present research proposes that existing social contacts are usually needed to find the first customer reference. (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) The start-up technology companies should focus on finding the key sales arguments based on the project done with the first customer reference; and (4) learning the technology with the help of the first customer reference should not be the primary goal of the start-up technology companies. (5) In order to increase the sales of the start-up technology company, it is not necessary to get a big 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-size company with a good reputation. We can also assume that the decision is simpler in small companies than in large corporations. These five principles together with a proper educational degree form a concept that can be termed the ‘pragmatic approach to building the first customer reference’.

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