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Master Thesis

Successful Software Entrepreneurship in Vietnam

A Knowledge Management Perspective

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Chapter 1: Introduction

1.1 Background and problem setting

1.1.1 The Growing importance of Software entrepreneurship

The Software industry has been paid special attention and consideration recently. The reason is that software has now become a *core competency and general-purpose technology* that is critical to the global competitiveness of most industries (all companies have the same hardware – they compete with software) and to the effective deployment of government services (beyond the basis of data processing) in every country, regardless of its level of economic development. Not only is software a critical part of modern industrial infrastructure and an important industry in its own right, but it is also the vehicle for implementing the other key elements of a knowledge economy: responsive and transparent government, a supportive effective social programs. Software is a fundamental capability that is deployed across almost all sectors of an economy. Moreover, as a nascent industry and fast-changing set of technologies, market forces alone are often inadequate to harness the industry's potential to address public services and social priorities and to serve the needs of the poor, rural areas, small and medium enterprises (SMEs), and non-government organizations (NGOs).

In a knowledge-based economy, the creation of wealth becomes synonymous with creating products and services with large software content (Hagel and Armstrong, 1997). Software is the ubiquitous technology that powers everything in the Information Age, embedded in everything from automobiles to electric can openers. The knowledge encapsulated in software will increasingly define the economic value of the intellectual capital it represents. Speaking of the importance of this new kind of capital, Stewart (1997) declares: “ . . . for a new Information Age economy, whose fundamental sources of wealth are knowledge and communication rather than natural resources and physical labor.” At the heart of this new economy lies the software industry, providing the enabling tools and infrastructure to IT professionals in virtually all other industries.

The impact of software cuts across all sectors of the economy, and the progress of other sectors will, in turn, spur further growth of the software industry. Strength in software (i.e., both knowledgeable software professionals and a software-literate workforce) has become an important factor in foreign direct

investment. It is also now a major component of modern industrial and commercial infrastructure and government administration. Finally, software is the implementation vehicle for major social programs such as distance learning, telemedicine, and on-line cultural offerings.

Software is a relatively low-investment, environmentally friendly, high-growth global industry - a good target growth industry for many countries. But it has also become the most critical and expensive element of the government and business systems that every nation must build for itself.

1.1.2 Knowledge Management in Technology Ventures

Knowledge is power. Knowledge assets and intellectual capital are potential sources of wealth. The creation and management of knowledge can lead to new, novel applications and products. Sharing knowledge throughout a firm can enhance the firm's processes and core competences, thus making the firm more innovative and competitive. Most technology ventures are based on *knowledge and intellectual property* that must be enhanced and managed. A learning organization is skilled at creating and sharing new knowledge and uses this knowledge to do a better job.

In technology ventures, especially software venture, knowledge can be seen as a source of innovation and change leading to action. Also, knowledge provides a firm with the potential for novel action and the creation of new ventures. Knowledge creates real wealth for a new venture through multiple applications. Knowledge applications have breadth across an organization and length in time of use. The knowledge represented by patented inventions, software, marketing programs, and skillful employees comprises 70 to 90 percent of the assets held by corporations like Microsoft, Amgen and Intel.

A technology venture creates and acquires knowledge and shares this knowledge among its people. As a result of this new knowledge, the organization adapts its actions and behavior. Knowledge is stored in documents, databases, and people's knowledge. Knowledge created in learning process is social process that leads to increasing knowledge. Knowledge is shared by people and embedded within the business processes of the firm. As the firm learns and creates new knowledge, new innovation is created.

1.1.3 The case of Vietnam

The attractiveness of Vietnam economy

In 1986, Vietnam started its transition from planned economy to market-oriented economy, which had a significant impact on the economic development of the country. The transition made Vietnam become the world's second-fastest growing economy, with 8% annual GDP growth between 1990 and 1997, around 7 - 8 % between 2000 and 2006.

Table 1.1: Vietnam's GDP by economic sectors from 1995 to 2006

	1995	1997	1999	2001	2002	2003	2004	2005	2006
GDP Growth	9.45	8.15	4.77	6.89	7.04	7.24	7.69	8.44	8.17
Agriculture, Forestry and Fishing	4.8	4.3	5.2	3.0	4.1	3.2	3.5	4	3.4
Industry and Construction	13.6	12.6	7.7	10.3	9.4	10.3	10.2	10.6	10.37
Services	9.8	7.1	2.3	6.1	6.5	6.6	7.5	8.5	8.29

Source: General Statistics Office, 2007

Vietnam has involved some important events promising a series of new success. Vietnam has recently become the 150th member of the World Trade Organization (WTO) after a long and sometimes fraught discussion process. The greatest benefit from joining the WTO is to be able to gain increased access to the

global market to push up economic growth and expand export turnover of Vietnam. WTO accession brings change for Vietnam's competitive industries and also attract more foreign investment. Besides, Japanese BRICs Research Institute has just come up with a new definition – VISTA, a group of prospective countries, including Vietnam, Indonesia, South America, Turkey and Argentina. These countries are new emerging economies with a high economic growth rate, rich natural resources, labor resources, stable politics and capability to attract foreign investment. In the future, labor resources aged 14 to 64 years will strongly increase in these countries and be appreciated as an important motivation for economic growth. And Vietnam is considered the most potential country among these. (BRICs Research Institute)

The increasing flow of foreign direct investment (FDI) to Vietnam

After 20 years of the economic reform, the foreign sector has become an organic component of Vietnam's economy and contributed a lot to the economic growth. In comparison with other countries and regions, Vietnam has achieved a positive growth.

Table 1.2: Vietnam's FDI from 1987 to 2006 by sector

Sector	Number of projects	Registered capital (\$ billion)	Disbursed capital (\$ billion)
1. Industry	4.344	33.280	17.807
Oil & Gas	31	1.993	4.458

Light industry	1,815	8.946	3.152
Heavy industry	1,880	15.011	6.157
Food industry	274	3.233	1.869
Construction	344	4.096	2.169
2. Agriculture	803	3.863	1.796
Agriculture & forestry	690	3.553	1.637
Aquaculture	113	0.309	0.158
3. Service	1,280	17.490	6.362
Transport, post & telecom	178	3.191	0.711
Hotel & Tourism	164	3.258	2.140
Banking & Finance	63	0.810	0.621
Culture, health & education	219	0.938	0.307
New urban area	5	2.865	0.51
Office building & apartment	117	4.056	1.662
IZ & EPZ infrastructure construction	20	1.020	0.518
Others	514	1.348	0.349
Total	6,427	54.634	25.966

Source: Vietnam Investment Review, Aug 14-20, 2006, p.20

Table 1.2 indicate that foreign direct investment has been focused mainly on manufacturing and construction with 4,344 projects and total registered capital of US\$ 33.28 billion, accounting for 60.91% of the country's total FDI capital; service having 1,280 projects and total registered capital of US\$ 17.47 billion, or 32% of the

country's total FDI capital attraction. At present, the preferred agriculture, forestry, fishery attracted only 803 projects, most of which were of small size, so their registered capital only estimated US\$ 3.8 billion, accounting for 6.95% of country's FDI capital. After eighteen years of implementing the Law on Foreign Investment in Vietnam since 1987, as many as 64 countries and territories has poured their capital in Vietnam. Among them, Asian investors account for 76.3% (4,909 projects) of total projects and 69% of total registered capital (US\$ 37 billion). EU investors implement some 8.8% of total projects (566 projects) and 14.6% of registered capital (\$US 8 billion); the United State of American takes 4.5% of projects (289 projects) and 3.6% of total registered capital (\$US 1.99 billion). There are 12 countries and territories having registered investment capital of more than one billion USD each. Seven come from Asian countries, 4 from the Europe. (Table 1.3)

**Table 1.3: Countries with registered capital of more than
US\$1 billion as of 2006**

Countries & territories	Number of Projects	Registered capital (\$ billion)	Disbursed capital (\$ billion)
Taiwan	1,484	8.027	2.830
Singapore	424	7.732	3.474
Japan	673	6.825	4.255
South Korea	1,166	5.865	2.407
Hong Kong	367	4.392	1.904
British Virgin Islands	268	3.091	1.279

France	171	2.183	1.045
Netherlands	69	2.100	1.748
US	289	1.994	0.730
Malaysia	194	1.610	0.843
Thailand	132	1.469	0.682
UK	74	1.307	0.639

Source: Vietnam Investment Review, Aug 14-20, 2006, p.20

The growth of domestic ventures

Vietnam have experienced dramatic social, economic and political changes, from the French war of independence (1946–54) and the American war (1963–75), to the reunification of North and South Vietnam in 1975. Since then, the country has come under the continuous rule of the Vietnamese Communist Party (VCP). Following reunification, the VCP introduced to the South the socialist model of central planning that had been adopted in 1954 by North Vietnam (the then Democratic Republic of Vietnam). This socialist development strategy featured central economic planning, with state ownership of the means of production, agriculture organised into state farms and collectives that served both as production and social units, and economic development based on large heavy industry (Ronnas and Sjoberg, 1991). However, combined with a staunch American embargo, border conflicts with China in 1979, the occupation of Cambodia from 1979 to 1989 and a gradual weakening of the USSR's economy, it soon led to “very serious macroeconomic imbalances” (Irvin, 1995, p. 726), causing macroeconomic instability, hyperinflation and budget deficits, together with chronic food shortages

and widespread poverty. By the mid 1980s, Vietnam was literally on the verge of bankruptcy, forcing the Communist Party to admit its 'errors and illusions' and subsequently, in 1986, to introduce a range of reform measures known as doi moi. *Doi Moi* means "economic renewal" includes opening doors to the world economy and liberalizing domestic trade, reforming state-owned enterprises, diversifying ownership and entrepreneurial development, reforming Vietnam's financial system with an orientation to a market based system; and attracting foreign investment as essential to foster the country's economic growth.

In 1990, Vietnam adopted for the first time its *Company Law and Law on Private Enterprise*. These laws were the first step in the creation of a new environment for entrepreneurship. Thus, for 8 years after the implementation of these laws, more than 35,000 enterprises was established, 61 percent during the period of economic boom in 1993, 1994 and 1995 (Phuong, 2003). After 1997, the regional financial crisis affected the country's economy, resulting in a declining growth rate for startup enterprises. Also, calls from within Vietnam's government for equal treatment of private, collective, state-owned and foreign-invested enterprises resulted in the need to revise the Company Law and Law on Private Enterprise. In response, the Enterprise Law, was adopted in 1999. Recently, the law has been revised once more in 2005 to match with the new context of Vietnam. The new enterprise Law fosters entrepreneurial spirit in the country.

The number of non-state companies has been increasing by years. In 1991 there were only 414 enterprises but in 1995, this number was 15276. It increased twice in 2000 to 30004 enterprises and 105169 enterprises in 2005 (General Statistic Office, 2007). Among non-state companies, private companies occupy the important

percentage with nearly 70%. This sector attract a huge amount of investment capital, spread to all business fields.

Private enterprises have played an increasing important role in job creation, investment structure, export and contribution to state budget and GDP, attract investment capital, create business environment and promote integration process during past decade.

1.1.4 Problem setting

Following this contextualization, we are able to frame the problem that motivates this study. In short, we focus our research on the success of entrepreneurs in the new context of Vietnam. We mainly discuss on the case of software ventures which have young entrepreneurs but successful with high growth rate of profit. We study on why software entrepreneurs can get success while they are still very young with the hope that other entrepreneurs can reference their successful model.

1.2 Objectives and research questions

Our objective is to propose a theoretical model to explain the knowledge-based entrepreneurial process. Besides, we would like to contribute a greater understanding of software ventures in Vietnam (especially outsourcing ventures) and to make recommendations for software entrepreneurs and policy makers.

The research questions that guide our study are stated as follows.

Major research question

How have successful Vietnamese software entrepreneurs emerged?

Subsidiary research questions

SRQ1: How have software entrepreneurs identified and evaluated opportunities?

SRQ2: How have knowledge been shared in software enterprises?

SRQ3: How have knowledge been utilized in software enterprises?

1.3 Methodology of the study

Case study as our main research strategy. 03 Vietnamese IT ventures are chosen to conduct the research mainly on software field. They are

- FPT Software Corporation (FSOFT)
- Tinh Van Outsourcing Corporation (TVO)
- CMC Software Corporation (CMC Soft)

All of them are successful, innovative, and leading companies in ICT field of Vietnam. The main data collection method has been qualitative consisting of interviews with the founders, key persons of these ventures and also through official documents analysis and observation. We conducted interview from August, 2006 to December, 2007 with founders, project managers and staffs of these ventures.

There are three main kinds of companies in Vietnam: state, non-state and foreign ventures. Our research concentrate to analyze non-state ventures including private ventures, joint ventures, limited ventures and partnerships mainly focusing on private companies.

1.4 Organization of the study

This thesis composes four chapters.

In chapter 2, the literature related to this study is reviewed. We first review studies on models and phases in entrepreneurial process. We then present literature review on knowledge based entrepreneurship. Finally, we concentrate to discuss on software entrepreneurship, focusing on IT and software entrepreneurship in Vietnam.

In chapter 3, three cases are analyzed in order to find the answer for the main research question: “How have successful Vietnamese software entrepreneurs emerged?”. With each case, we firstly present on their outline, history and core value.

We then focus our analysis on opportunities recognition process of founders, knowledge sharing activities.

Finally, Chapter 4 is general conclusions from this study. We provide a summary of major findings by answering the research questions, propose theoretical and practical implications and make suggestions for future research.

Chapter 2: Literature Review

2.1 Introduction

The literature review chapter summarized the arguments for the role of entrepreneurship process. We also discussed on the importance of knowledge-based entrepreneurship mainly in IT and software industry of Vietnam, an emerging potential economy, a “new Asian tiger”.

The purpose of this chapter is to review existing literature concerning our topic. We first review studies on models and phases in entrepreneurial process. We then present literature review on knowledge based entrepreneurship. Finally, we concentrate to discuss on software entrepreneurship, focusing on IT and software entrepreneurship in Vietnam.

2.2 Entrepreneurial process model

2.2.1 Entrepreneurial process model

The understanding of entrepreneurship owes much to the work of economist Joseph Schumpeter and the Austrian economists such as Ludwig von Mises and von Hayek. According to Schumpeter, an entrepreneur is a person who is willing and able to convert a new idea or invention into a successful innovation. Entrepreneurship forces "creative destruction" across markets and industries, simultaneously creating new products and business models (Schumpeter, 1950). With this analysis, business models is one of two essential output of entrepreneurs.

By giving the definition of “business model”¹, Osterwalder, Pigneur and Tucci (2005) have shown the important role of business model in enterprises. Among business models studies are studies on entrepreneurial process models which are to integrate certain sub-processes that have been well studied such as description on “opportunity recognition” of Stevenson and Bygrave (1987), Timmons (2003), Gartner et al. (2004).

“The entrepreneurial process involves all the functions, activities, and actions associated with perceiving opportunities and creating organizations to pursue them.” (Bygrave , 2004, p.2)

Since Entrepreneurship was first recognized and paid attention in 17th century by Cantillon, there are a lot scholars mentioned about process models. But we concentrate our review on some recent significant scholars (Timmons, Bygrave and Baron).

The Timmons model² has three crucial components for a successful new business: *the Opportunity*, *the Resources* needed to start the company and make it grow and *the Entrepreneurs* (the management team, if it’s a high potential venture). At the center of the framework is a business plan, in which the three basic

¹ Osterwalder, Pigneur and Tucci defined “A business model is a conceptual tool that contains a big set of elements and their relationships and allows expressing the business logic of a specific firm. It is a description of the value a company offers to one or several segments of customers and of the architecture of the firm and its network of partners for creating, marketing, and delivering this value and relationship capital, to generate profitable and sustainable revenue streams.” (Osterwalder, Pigneur and Tucci, 2005, p.5)

² The Timmons Model originally evolved from doctoral dissertation research of Timmons at the Harvard Business School, about new and growing ventures. Over nearly three decades, the model has evolved and been enhanced by ongoing research, case development, teaching, and experience in high potential ventures and venture capital funds. (Timmons and Spinelli, 2003)

components are integrated into a complete strategic plan for the new business. The parts must fit together well.

Explaining about the importance of opportunity, he noted that the greater the growth, size, durability, and robustness of the gross and net margins and free cash flow, the greater the opportunity. The more imperfect the market, the greater the opportunity. The greater rate of change, the discontinuities, and the chaos, the greater is the opportunity. Main resources have been mentioned are financial resources, assets, people and business plan. He emphasized thinking money first is a big mistake and concluded that one of the worst things that can happen to an entrepreneur is to have too much money too early. And the third components, an entrepreneurial team, is a critical ingredient for success. Rounding out the model of the three driving forces is the concept of Fit and Balance between and among these forces. And also in Timmons model, we could see the team is positioned at the bottom of the triangle, especially, the entrepreneurial leader of the venture, standing on a large ball, balancing the triangle over his head.

The entrepreneurial process model of Bygrave includes the personal, sociological, and environmental factors that give birth to a new enterprise (Figure 2.1). We found that this model is more complete and specific than Timmon's model. Bygrave's model includes all factors mentioned in Timmon's model, and also share entrepreneurial process model into phases from Innovation to Growth phase. He listed personal, sociological, and environmental factors that influence to entrepreneurial process and explained that a person gets an idea for a new business either through a deliberate search or a chance encounter. Whether or not he decides

to pursue that idea depends on factors such as his alternative career prospects, family, friends, role models, the state of the economy, and the availability of resource.

There are four main phases in Bygrave's model: *Innovation, Triggering event, Implementation* and *Growth*. Bygrave stated that as with most human behavior, entrepreneurial traits are shaped by *personal attributes* and *environment*. It turns out that a person who rises to the top of any occupation, whether it be an entrepreneur or an administrator, is an achiever. Granted, any would-be entrepreneur must have a need to achieve, but so must anyone else with ambitions to be successful. It does appear that entrepreneurs have a higher locus of control than nonentrepreneurs, which means that they have a higher desire to be in control of their own fate. This has been confirmed by many surveys which have found that entrepreneurs say that independence is their main reason for starting their businesses. Perhaps as important as personal attributes are the external influences on a would-be entrepreneur. It's no accident that some parts of the world are more entrepreneurial than others. The most famous region of high-tech entrepreneurship is Silicon Valley. Because everyone in Silicon Valley knows someone who has made it big as an entrepreneur, role models abound.

"Role models are very important because knowing successful entrepreneurs makes the act of becoming one yourself seem much more credible."

(Bygrave , 2004, p.7)

the contacts an entrepreneur will need. They can also provide human contact because opening a business can be a lonely experience for anyone who has worked in an organization with many fellow employees.

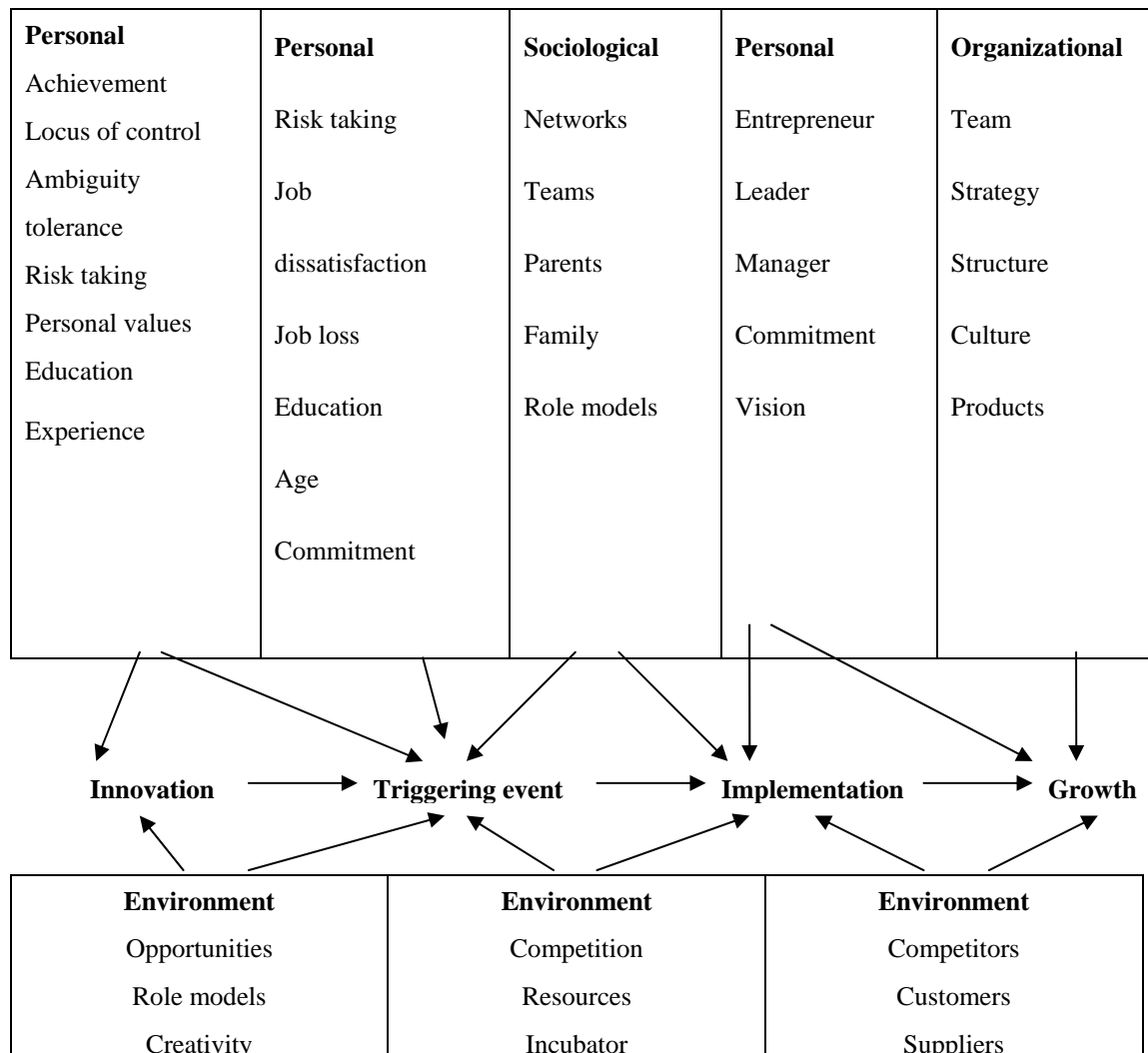


Figure 2.2 A model of the entrepreneurial process

Although Bygrave's model have a lot of progressive points comparing with Timmons' model, we recognized that it's rather complicated. Reviewing the entrepreneurial process model of Baron, we found that this mentioned to all factors and phases of entrepreneurial process but cleared than two previous models.

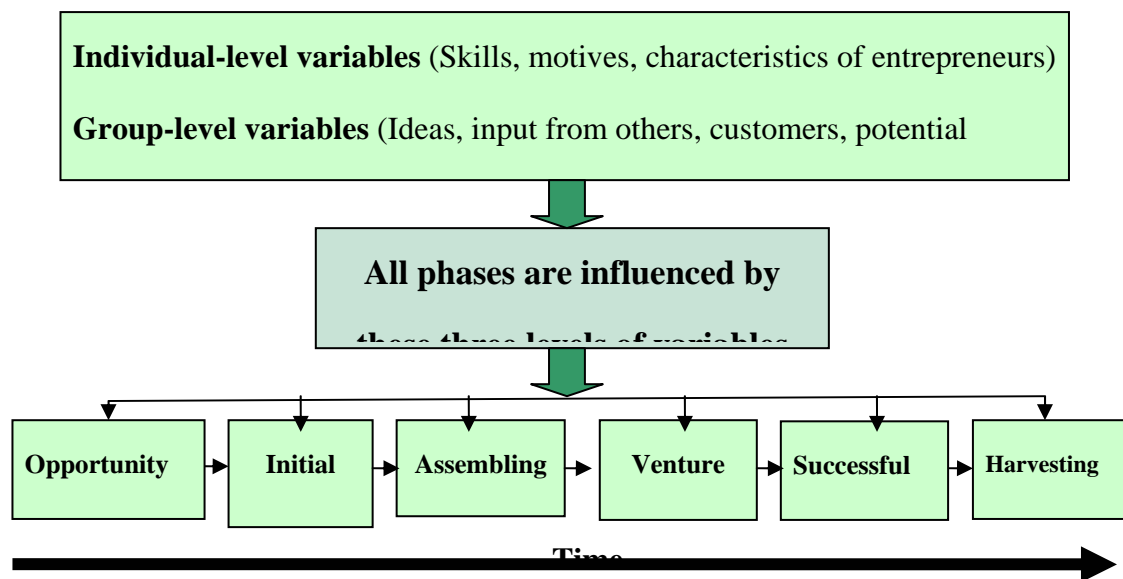


Figure 2.3 A model of the entrepreneurial process of Baron

Baron's entrepreneurial process unfolds over time and moves through a number of different phases from opportunity recognition phases to harvesting the rewards phase which is stated in the Figure 2.3. Events and outcomes during each phase are affected by many individual-level, group-level, and societal-level factors. Baron viewed entrepreneurship in this manner offers several benefits. First, it helps avoid a static view of entrepreneurship - one that sees entrepreneurship as a specific act (launching of a new venture) that occurs and is then complete. Such a view ignores the fact that entrepreneurs face an everchanging array of tasks and challenges, and that they often think and feel differently about them as they change and unfold. Second, viewing entrepreneurship as an ongoing process draws attention to the key activities entrepreneurs must perform as they proceed with their efforts to convert ideas for new products or services into successful business. It has long been recognized that how well entrepreneurs perform these activities is often more central to their success than their personal characteristics or background. Attention to

entrepreneurs' tasks, in turn, gives us a good handle on identifying the skills, knowledge, and characteristics they need to function effectively in this role.

2.2.2 The phase opportunity recognition:

Opportunity recognition has been cited as a central and unique component of entrepreneurship (Christensen et al. 1994; Gaglio 1997; Gaglio and Katz 2001; Gartner et al. 2001; Kirzner 1997; Shane and Venkataraman 2000), as well as being the first stage of the entrepreneurial process (Christensen et al.; Hills 1995; Timmons et al. 1987). Hills and Singh³(2004) defined:

“Opportunity recognition as perceiving a possibility for new profit potential through (a) the founding and formation of a new venture or (b) the significant improvement of an existing venture”(p. 260).

From this definition, opportunity recognition can be conceived as an activity that can occur both prior to firm founding and after firm founding throughout the life of the firm. Baron and Shane (2005) pointed out that opportunity recognition is a key step in the entrepreneurial process. Besides, some researchers have developed conceptual models of the opportunity recognition process⁴. One of the earliest models to appear in the literature was developed by Long and McMullan (1984). Developing their model they make the assumption that opportunity recognition is a process, under personal control (at least partly), which becomes realizable after

³ The definition of Hills and Singh based on the definition offered by Christensen and Peterson (1990)

⁴ e.g., Bhawe, 1994; Christensen et al., 1994; Singh, 2000

substantial preparatory work, therefore personalizing and making it inaccessible to others. They also note that the process described in the model is not linear and may take considerable time. The model they developed was presented as a 4-step process:

- 1) Pre-vision;
- 2) Point of Vision;
- 3) Opportunity Elaboration;
- 4) Decision to Proceed.

The Lumpkin, Hills, & Shrader (2004) model was explicitly developed on the creativity process and parallels the Long and McMullan model in a 5-step process:

- 1) Preparation;
- 2) Incubation;
- 3) Insight;
- 4) Evaluation;
- 5) Elaboration.

Another stream of research has focused on opportunity recognition as an innate skill or cognitive process (Gaglio, 1997; Gaglio and Taub, 1992; Kaish and Gilad, 1991) that has evolved out of Kirzner's work (1973, 1979). He introduced the idea of entrepreneurial alertness – “the ability to notice without search opportunities that have hitherto been overlooked.” In his view, opportunity recognition is experienced as a flash of insight, the “aha” experience (Point of Vision and Insight).

2.2.3 The phase assembling the resources

Burley (1987) stated that the process of assembling the resources necessary to begin trading. Creating a business is about assembling resources - people, premises, equipment, customers, suppliers, money. Unfortunately, only the very rich entrepreneurs are able to assemble an ideal shopping list, and to make swift and

satisfactory purchases. Indeed, if this were the case, many more badly conceived and executed businesses would be born than is currently the case. The process of assembling the resources is critical.

Having an idea for a new product or service or recognizing an opportunity is only, of course, the first step in the process. At that point, an initial decision to proceed - to do something active about the idea or opportunity – is required. As Shane et al. (2002) suggest, the entrepreneurial process occurs because specific persons make this decision and act upon it. In their view, understanding entrepreneurs' motives is crucial to comprehending the entire process. Deciding to start a business is one thing, actually doing so is quite another. Would-be entrepreneurs quickly discover that they must assemble a wide array of required resources including:

- 1) Basic information (about markets, environmental and legal issues)
- 2) Human resources (partners, initial employees)
- 3) Finance resources

Baron and Shane (2005) stated that gathering these resources is one of the most crucial phases of the entrepreneurial process, and unless it is completed successfully, opportunities – no matter how good – come to naught. It is at this stage, and especially when seeking financial backing, that entrepreneurs typically prepare a formal business plan – a detailed description of how they plan to develop their new venture.

There are also some scholars combine the phase preparing business plan and the phase assembling the resources into one like the case of Hisrich et al. (2005). Their process model has four distinct phases: (1) identification and evaluation of the opportunity, (2) development of the business plan, (3) determination of the required

resources, and (4) management of the resulting enterprise. Among these phases, the resources are needed for addressing the opportunity. This process starts with an appraisal of the entrepreneur's present resources. Any resources that are critical need to be differentiated from those that are just helpful. Care must be taken not to underestimate the amount of variety of resources needed. The downside risks associated with insufficient or inappropriate resources should also be assessed. Acquiring the needed resources in a timely manner while giving up as little control as possible is the next step in the entrepreneurial process. An entrepreneur should strive to maintain as large an ownership position as possible, particularly in the start-up stage. As the business develops, more funds will probably be needed to finance the growth of the venture, requiring more ownership to be relinquished. Alternative suppliers of these resources, along with their needs and desires, need to be identified. By understanding resource supplier needs, the entrepreneur can structure a deal that enables the resources to be acquired at the lowest possible cost and the least loss of control.

2.2.4 The phase Launching a new venture:

Once the required resources are assembled, the new venture can actually be started up. Doing so involves a wide range of actions and decisions: choosing the legal form the new venture, developing new product or service, establishing the roles of the top management team, etc. The simplest legal form of business ownership is Sole proprietorships (ownership by one person). Besides, there are another forms like Partnerships, Corporations, Joint ventures etc.. After developing new product, entrepreneurs set the prices of their new products by considering several things: their

cost structure, the supply and demand conditions in the market in which they operate, customer trade-offs between product attributes and price, and hidden costs and discounts (Shane and Baron, 2005).

2.3 Knowledge Based Entrepreneurship

The focus of this research is the Knowledge Based Entrepreneurship (KBE)⁵. We begin with some classical views mainly on the work of Kirzner and Schumpeter, and then continue with some modern views on KBE.

The Austrian theory of entrepreneurship is considered in the light of the generation of knowledge (Buros, 2003). It is suggested that learning involving more than the discovery of profit opportunities provides a way to endogenize knowledge and to expand the scope of entrepreneurial activity. Any Austrian perspective in entrepreneurial studies must proceed from the body of work that Kirzner has produced. His theory on entrepreneurship concentrate on alertness, discovery, and the elimination of error, abstracts from certain kinds of real world activity arguably associated with entrepreneurial activity. Kirzner's argument that people are likely to take notice of what they are interested in is a corollary of Smith's theory of economic development; since anyone requires some prior knowledge in order to identify any opportunity, it is reasonable to conclude that alertness, like knowledge, will be highly differentiated, and the finer the differentiation, the more sensitive an individual is likely to be to potentially significant detail which would escape the

⁵ In this research, using the phase KBE, we mention to start-up ventures that to a considerable extent are based on advanced technical specialist knowledge. They thrive on research results and close relations to universities, research institutions and major knowledge based industries. They are often started by teams of highly skilled academics and business people, and occasionally they create stunning values to their owners, customers and employees.

notice of almost everyone else. Besides, Butos also pointed out that “Kizner’s theory of entrepreneurship provides an account of a crucially important aspect of the market process.” This can be seen in Kizner’s (2000) discussion of the horse-drawn carriage and automobile industries. The market process involves agents who have the capacity to both discover and generate individual knowledge, their interactions, and the generation of the market level by products stemming from those interactions. The process involves complex feedback loops operating at all levels and learning, both in the sense of correcting mistakes and of producing new knowledge. In a process of this kind, “market equilibrium” refers to the logical implications of a particular model without endogenous knowledge. The knowledge-generating perspective discussed here provides scope for introducing endogenous knowledge that may allow for a fuller treatment of the complexities associated with the market process and a basis to empirically support a more complete range of behaviors ordinarily associated with entrepreneurial activity.

Where knowledge is not only dispersed and incomplete but also changing, there is scope for those who are capable of combining together the power of the most distance and dissimilar objects. Making new combinations is the characteristic role of Schumpeter’s entrepreneurs. Schumpeter (1934) makes a sharp distinction between entrepreneurship and management, but later appears to reverse his position and claims that ‘innovation itself is being reduced to routine’ (Schumpeter, 1943). Langlois (1987) noted that the reutilization of entrepreneurship is foreshadowed in Schumpeter’s earlier work, as a direct consequence of the increase in human knowledge: “the more accurately, however, we learn to know the nature and social world, the more perfect our control of facts becomes; and the greater the

extent...within which things can be simply calculated...the more significance of this entrepreneurial function decreases' (Schumpeter, 1934, p.15). Having been located within an empiricist theory of knowledge, the entrepreneur is progressively squeezed out an increasingly rational theory. This version of Schumpeter's theory accommodates the views of those who believe that all knowledge is potentially codifiable and therefore, it appears, potentially completable.

Butos (2003) on "Entrepreneurship and the generation of knowledge" noted that recognized entrepreneurship as knowledge-generating activity that can usefully extend Kirzner's insights. He proposed a market process approach in which entrepreneurs not only discover existing knowledge but also generate new knowledge, in terms of both their own understanding of reality and of changes their actions induce in the market. His discussion so far has suggested that the problem of the division of knowledge and the mechanisms for the transmission of knowledge, so famously associated with Hayek and Kirzner, constitutes one side of the significance of knowledge for economics. If it is indeed useful to explore the economics aspects of the generation of knowledge, part of that exploration would seem to suggest broadening the scope of the role of the entrepreneur in the market process beyond alertness to price differentials. One implication of a knowledge-generating perspective is that the discovery and elimination of error no longer constitutes the only relevant aspect of entrepreneurial activity. Instead, the theory of entrepreneurship also refers to the inherent capacity of individuals to create knowledge – Hayekian interpretations or Popperian conjectures – about their environment as it was, as it is, and also as it might be.

Besides, Groen (2005) mentioned the phase “Knowledge intensive entrepreneurship”. He supposed that entrepreneurial processes can be defined as processes, in which an entrepreneur sees business opportunity, develops it to a business concept and bring it into exploitation. And he called knowledge intensive entrepreneurial process when these processes are to a great extent based on relatively new (mostly academically derived) knowledge or technology. He continued to explain that the development and introduction of new technology offers opportunities for knowledge intensive entrepreneurship. Entrepreneurship is defined as a context dependent process, through which individuals and teams create wealth by bringing together unique packages of resources to exploit market place opportunities (Lyon et al., 2000; Ireland et al., 2001; Brush et al., 2001)

New knowledge which shapes and supports technological advance continually emerges in the academic institutions. It is a result of publicly financed, scientific problem solving. As such, its generation is not (primarily) guided by application interests. However, such knowledge usually carries some commercial business potential. In recent years, one question has therefore attracted increasing interest both in economic research and in politics (Nelson, 1993; Edquist and McKelvey, 2000; Salter and Martin, 2001). How does new knowledge from scientific research find its way into the commercial part of the innovation system? How does it support technological advance? Witt and Zellner (2006) argued that the transfer is essentially an entrepreneurial process. On the other hand, to understand the process, it is necessary to recognize the kind of actions and services involved in the entrepreneurial reshaping of the division of labor. In general, entrepreneurship requires command over suitable resources. In the case of *knowledge based*

entrepreneurship, there are, in particular, resources enabling the access to, and the exploitation of, *new technological knowledge* (Witt and Zellner). Therefore, an essential of entrepreneurial activity here is the organization of the knowledge transfer from academic research to commercial production and marketing activities. Especially, Witt and Zellner emphasized that the transfer does not happen unless someone conceives of business opportunities in new scientific knowledge in the first place. Then these imaginings have to be transformed into conceptions of how to run a business firms. On that basis, resources – foremost the necessary knowledge resources – have to be attracted and coordinated. Where business organizations already exist, the new knowledge resources must, furthermore, be integrated with the organization's expertise and capabilities to yield a coherent business conception. It has been argued that each of these services is a core element of knowledge based entrepreneurship.

One sub topic that a lot of scholars have paid attention to is “Knowledge as a source of entrepreneurial opportunities”. Entrepreneurship necessarily involves individuals and their response to economic opportunities (Shane and Eckhardt, 2003). Not only is the source of opportunities important, but *the nature of the individual recognizing and commercializing these opportunities*. Studies have shown that entrepreneurial opportunities are not exogenously given but rather endogenously and systematically created under certain conditions. They are the outcome of investments in new knowledge and ideas (Schumpeter, 1942) on the one hand, and the accumulation of knowledge in individuals (Shane 2000) and firms (Cohen and Levinthal, 1989; 1990). Prior knowledge enables certain entrepreneurs to be alert to new opportunities (Shane 2000; Kirzner 1973). There has been much empirical

research showing that firms located near knowledge sources introduce innovations at a faster rate than rival firms located elsewhere. These studies frequently invoke the existence of localized knowledge spillovers as an explanation for this correlation. Economists have termed this non-rival characteristic of knowledge ‘*knowledge spillovers*’ (Arrow 1962; Nelson 1959). Knowledge spillovers have been defined as:

“any original, valuable knowledge generated somewhere that becomes accessible to external agents, whether it be knowledge fully characterizing an innovation or knowledge of a more intermediate sort. This knowledge is absorbed by an individual or group other than the originator” (Foray (2004, p. 91).

Besides, empirical studies also concentrate on finding the answer for the research question: *“How does the creation of new knowledge stimulate high tech enterprise?”*. Two different mechanisms are found to be relevant for high-growth technology-based start-ups: research and human capital (Audretsch, et al. 2005; Audretsch and Lehmann, 2005b). The latter mechanism involves embodied knowledge flows via highly educated entrepreneurs (Colombo and Delmastro, 2002) and the recruitment of students (Mian, 1996). Research excellence is a critical factor for high-growth technology based firms. Technical universities are not necessarily more successful in facilitating the spillover and commercialization of knowledge (Audretsch and Lehmann, 2005a).

Heeboll (2007) devise knowledge based entrepreneurship into types including a division into biotech, life sciences, information technology, communication and industry, since the capital requirements and the investors in the

venture capital market reflect this kind of mapping. For the limitation of time and resources, this research concentrate to analyze startup enterprises in information technology industry mainly focus on software business enterprises.

2.4 Software business Entrepreneurship

2.4.1 Characteristics of Software Entrepreneurship

The technology sector represents a significant portion of the economy of every industrialized nation. In the United States, more than one third of the gross national product and about half of private sector spending on capital goods are related to technology. It is clear that economic growth depends on the health and contributions of technology businesses. Dorf and Byers (2005) pointed out that “*technology has become ubiquitous in modern society*” (p.15). Note the proliferation of cell phones, personal computers, and the Internet in the past decade and their subsequent integration into everyday commerce and our personal lives. They emphasized that most technology ventures are based on *knowledge and intellectual property* that must be enhanced and managed. Explaining about the importance of this, they gave a table of managing knowledge in a technology venture with four steps (as Table 2.1)

Table 2.1 Managing knowledge in a technology venture

1. **Role:** Identify and evaluate the role of knowledge in the firm
2. **Value:** Identify the expertise, capabilities, and intellectual capital that creates value in the form of products and services.
3. **Plan:** Create a plan for investing in the firm’s intellectual capital and exploiting its value while protecting it from leakage to competitors.
4. **Improve:** Improve the knowledge creation and sharing process within the new venture

Though knowledge is one of the few assets that grows when shared, the new venture needs to carefully determine what knowledge to share and what knowledge should be protected and keep secret. This is particularly true for technology ventures for which intellectual property is usually their key asset. Most professionals are unable to keep up with all they need to know. One method of knowledge access is to embed knowledge into the technologies used by the professionals. For example, when designing a product, the data bases required can be linked directly to the design tools (Davenport and Glaser, 2002).

More focus on high-technology entrepreneurship, Bernasconi et al. (2006) concentrate to analyze *managing innovation, variety* and *uncertainty* in high-tech enterprises. They supposed that High-tech entrepreneurship is the creation of value from technical innovation through success in business (*p.2*). It is not a person, nor is it an idea; rather, it is a *process*. It is *a process of building new companies* based on technologies. It is not the only way to innovate, and is not necessary best way to innovate, but a way that is well adapted to complex situations. Their study leads us to see each high-tech entrepreneurial context to be at least highly but complexity that itself differs from manager and from management situation to management situation. Besides, management in high-technology entrepreneurial contexts has, however, one other dominant trait: uncertainty. This includes risk, differences between contexts, and evaluation of the unknowable. Uncertainty and complexity, innovation and advanced technology is what makes it difficult to use the usual linear business economic models and planning, and makes it necessary to reflect on how to cope with management under these entrepreneurial conditions.

In a knowledge-based economy, the creation of wealth becomes synonymous with creating products and services with large software content (Hagel and Armstrong, 1997). Software is the ubiquitous technology that powers everything in the Information Age, embedded in everything from automobiles to electric can openers. The knowledge encapsulated in software will increasingly define the economic value of the intellectual capital it represents. Speaking of the importance of this new kind of capital, Stewart (1997) declares: “ . . . for a new Information Age economy, whose fundamental sources of wealth are knowledge and communication rather than natural resources and physical labor.” At the heart of this new economy lies the software industry, providing the enabling tools and infrastructure to IT professionals in virtually all other industries. A key characteristic of the software

industry is that, despite a few major players, as a whole it is fragmented and consists mainly of small, niche market entrepreneurial ventures.

Software is a relatively low-investment, environmentally friendly, high-growth global industry – a good target growth industry for many countries. But it has also become the most critical and expensive element of the government and business systems that every nation must build for itself (Tessler et al., 2003, p.2). In their study, they also contributed several unique characteristics of the software industry. They are:

- The different segments of the software industry (shrink-wrapped products, enterprise products, software services, embedded systems, technology licensing, etc.), each with its own methodologies and its own global marketplace with established players, business methods, and barriers to entry;
- The different kinds of talent and skills that make up software teams in different parts of the industry. There is a wide range of technical skill categories, and other skill areas, like project management, technical hiring, and product marketing, that are just as important to successful industry growth;
- The key role of innovative startup companies in the industry, the importance of entrepreneurship, venture capital, the developmental stages of a software startup, and the special supportive habitat required by small technology companies;
- The need to build new software on top of layers of existing, “base-level” software infrastructure, which demands that domestic systems use industry-standard architectures so that customers are comfortable with domestic providers and so that local innovations can be directly exported; and
- The absence of a manufacturing phase in software product development, which makes the software publishing industry especially fluid. Product specifications, technology platforms, marketing partnership, etc. are usually volatile. This makes planning difficult and introduces additional risk.

Besides, Tessler et al., also explained why software industries requires special attention and consideration. The reason is that software has now become a *core competency and general-purpose technology* that is critical to the global competitiveness of most industries (all companies have the same hardware – they compete with software) and to the effective deployment of government services (beyond the basis of data processing) in every country, regardless of its level of economic development. Not only is software a critical part of modern industrial infrastructure and an important industry in its own right, but it is also the vehicle for implementing the other key elements of a knowledge economy: responsive and

transparent government, a supportive effective social programs. Software is a fundamental capability that is deployed across almost all sectors of an economy. Moreover, as a nascent industry and fast-changing set of technologies, market forces alone are often inadequate to harness the industry's potential to address public services and social priorities and to serve the needs of the poor, rural areas, small and medium enterprises (SMEs), and non-government organizations (NGOs).

They conclude that the impact of software cuts across all sectors of the economy, and the progress of other sectors will, in turn, spur further growth of the software industry. Strength in software (i.e., both knowledgeable software professionals and a software-literate workforce) has become an important factor in foreign direct investment. It is also now a major component of modern industrial and commercial infrastructure and government administration. Finally, software is the implementation vehicle for major social programs such as distance learning, telemedicine, and on-line cultural offerings.

2.4.2 Software - technology and business

Software has special characteristics as a technology and as a business. Understanding these characteristics is essential for an entrepreneur to succeed in the software business (Cusumano, 1998). First, the technology consists of computer code -- instructions written in one of many programming languages -- running on computer hardware and over networks. There is no bending of metal or molding of plastic to create software products. But products can be large and extremely complex in terms of the number of components and their potential interactions. (Microsoft's Windows 95 operating system, for example, totaled about 11 million lines of code and took a team of about 400 developers and testers nearly 3 years to create.) This is truly a "*knowledge*" industry, where products consist of ideas and the key assets of a company are well-trained people -- often very young people. Product distribution is also increasingly "electronic" and "instantaneous" over telephone and cable-TV networks.

Another characteristic of software relates to what Cusumano call the mythical man-month syndrome. Managing software projects is notoriously difficult (there is something like a 10 or 20 to 1 difference in productivity between the best and worst programmers on a typical team). How long it will take to build a product is extremely difficult to predict because of the variance in individual performance as well as the uncertainty of the technology (programmers often have to "invent" functions as they go along). And people and months are not interchangeable;

companies usually cannot speed up late projects by just adding more people, because the new people take time to learn what has been done and existing team member must stop and teach them what to do. Larger teams also create communications and coordination problems. Then testing software products -- finding and removing bugs -- is also incredibly difficult due to the huge number of combinations of software and hardware products and user scenarios. Yet shipping at least "good enough" products in a timely fashion can be critical to success.

Not surprisingly, software programmers have created a *special culture*: The companies they prefer to establish and work in are notoriously non-bureaucratic, informal, and laid-back, but very hard-working.

Then there is the rapid pace of change. Since the beginning of the software industry in the 1950s, the hardware technology and software programs have evolved with astounding speed. The industry is particularly fast-paced in certain segments where the hardware changes the fastest, such as PC software and Internet platforms and applications. This pace is due not only to the rapid evolution of hardware, driven mainly by Intel for personal computers, but also the pliability of the technology, and the ability of even individuals in garages to come out with significant product and technological innovations.

The pace of change means that the future is uncertain. Managers in the PC software business do not know precisely what their products and markets beyond a year or so in advance. Hardware evolution is a bit more predictable (it is guided more by the "laws" of physics). But how far and fast the software side will evolve, and when and how users will react to innovations, is usually guesswork. This means that entrepreneurs and managers in this business must be able to live with great uncertainty and constantly make educated guesses -- which is why having a deep understanding of the technology is often critical.

Another peculiar characteristic of software is *the important role of technical standards and network externalities*. Simply having a great product is not enough, in hardware or software. Software must work on computer hardware and systems software platforms, and different software programs must be able to work together. As a result, software companies have raced to establish a large enough presence to create a "standard," or they have struggled to be "compatible" with existing standards created by others. What becomes the software standard also depends in large part on hardware standards and sales of hardware platforms. The term "network externality" comes into play here in that the value of a software product is often less dependent on the price or functionality of the product itself than it is on whether or not the

product is compatible with the existing standard. This is "external" to the product itself. And the more computer systems that are sold which are compatible with the standard your product supports -- in other words, the greater the network of users for that standard -- then the more valuable your product and the standard become. Therefore, an essential part of being a successful software entrepreneur is to understand market dynamics and how to use customer and competitor behavior to your advantage.

Finally, another characteristic of software is the tremendous opportunities the business presents to make money and have fun. The software industry has produced a remarkable number of millionaires and several billionaires, even though most programmers say they are not motivated by money. And the market is only beginning to grow. There are 5 billion-plus people in the world, and perhaps 250 million users of PC and Mac personal computers. Furthermore, constant evolution of hardware capabilities means that software users, like it or not, are frequent repeat customers -- probably for life.

2.5 ICT and software industry in Vietnam

2.5.1 ICT Industry in Vietnam

Several developing economies (e.g., India, Philippines) have benefited from the ICT outsourcing trend starting by Kodak in the early 1990s⁶, spurring others to follow. Vietnam, a socialist country with "China -like" aspirations is one of the newer entrants in the global ICT business. In recent years, ICT development has been established as a high national priority by the Government of Vietnam: "Information technology is one of the most important driving forces for development. IT strengthens our material, intellectual and spiritual growth...promotes the reform process, speeds the modernization of economic sectors, and empowers the competitiveness of business".⁷ Information and communication technologies (ICT) offer enormous opportunities for trade, job growth, efficiency improvement and economic development. ICT provide a platform for building and applying knowledge, facilitating participation in trade for isolated communities, small and medium enterprises and large corporations, improving national competitiveness, increasing

⁶ The multinational firm Kodak sparked the ICT outsourcing trend with its much publicized contracts with IBM, Digital Equipment Corp. and BusinessLand Inc worth \$250 million. (As reported by International Data Corp.)

⁷ Stated from the Directive No.58-CT-TW, Oct.17th, 2000 issued by the Central Committee of Socialist Republic of Vietnam

human resource skills, and improving the delivery of public and private services. (Smith et al, 2003).

Total IT spending in 2005 (for both locally produced and imported products) stood at \$828 million, up 20.9 per cent from the year earlier. \$630 million came from hardware, up 15.6 per cent, and \$198 million from software and services, up 41.1 per cent. Growth in 2005 was lower than in 2004 (at 33 per cent). Despite the fact that the growth rate was lower than the previous year, these figures are still impressive in the context of average IT spending around the world being at 7.1 per cent (HCA, 2007). Spending on IT equipment imports leapt 30 per cent to \$1.24 billion, with local companies contributing \$525 million, up 13.6 per cent, and foreign invested enterprises accounting for the remainder. Exports brought in \$1.42 billion, up 59 per cent, with two Japanese-invested companies, Fujitsu and Canon, contributing the most. Fujitsu exported \$515 million worth of motherboards while Canon earned \$450 million from printer shipments and \$100 million from PC components.

As regards the local IT industry (based on locally produced and sold products plus exported products), value reached \$1.4 billion, an increase of 49.6 per cent. The IT and software services segments saw revenue grow 47 per cent, to \$250 million, of which \$180 million was from the local market and the remainder from software outsourcing contracts with foreign companies.

The strong development of the IT industry in recent years to improved Internet infrastructure. The Internet transmission capacity expanded twice to reach 4,080 Mbps as at May this year. The number of Internet subscribers increased by 86 per cent and Internet users by 80 per cent, to reach a combined 12.9 million people as at May. Internet users now account for 13.5 per cent of the country's population.

The position of Vietnam *on the global ICT map* is brighter than in 2006, with many higher ratings. Specifically, four out of seven indexes are higher while three are lower (HCA, 2007). Innovation + Education + ICT, ICT opportunity, E-readiness are some indexes higher than last year.

However, the IT and software industry is still at a nascent stage in Vietnam, although progress has been made in certifying a few software firms, and ambitious plans are in place. There is a fact that the Vietnamese ICT sector is relatively small compared even to countries like the Philippines or Indonesia. (Chidamber, 2003). Software is a small but growing segment of the ICT sector totaling approximately 25\$ million in annual revenues. Vietnam's emerging software industry has mushroomed from just a few scattered firms in 1998 to approximately 700 companies in 2006. With infrastructure improvements happening virtually every day,

Vietnam's software outsourcing industry is poised to evolve into a major player in the global arena. As foreign customers, Japan continues to be the biggest importer of Vietnam's IT products, buying \$416 million worth, followed by Singapore with \$348 million, Hong Kong \$105 million, China \$83 million, Malaysia \$61 million and the US and Taiwan \$59 million each.

2.5.2 Software outsourcing industry in Vietnam

The world software outsourcing industry needs skilled, low-cost labour, and Vietnam is on its way to providing it – assuming the country can make a few key changes. The nation's fledgling software outsourcing industry has grown by more than 50 per cent annually over the past three years⁸. But 2006 software outsourcing revenues of US\$90 million may be just the beginning. Software companies in the US, EU and Japan are likely to spend \$27 billion on outsourcing this year, and India, the world's go-to country for outsourcers, only has the capacity to satisfy half of the predicted demand. That leaves the door wide open for Viet Nam and the 20,000 information technology (IT) engineers earning degrees here each year.

Domestic involvement in the software outsourcing industry began about 10 years ago, but development has especially taken flight in the past five. Overseas Vietnamese and local software companies jumped at the opportunities presented in the mid-90s when companies in developed countries began large-scale "outsourcing", using subcontractors in developing countries to meet the need for IT human resources. At the time, Vietnamese software enterprises were relatively small, and the country had yet to develop a reputation for IT-trained labor. The crisis that struck the global IT industry in 2000 and 2001 weeded out the weakest domestic software companies and helped the superior enterprises tweak their strategies. Since 2002, with the recovery and stable growth of the world IT sector, Vietnamese software outsourcing firms have been steadily developing and solidifying Viet Nam's place on the global software outsourcing map. As India and China have fallen short of the

⁸ This is cited from the annual report on software technology industry in 2006 published by HCM City Computer Association

voracious demand for IT labour, multinational firms have started to pay attention to Viet Nam as a potential software outsourcing destination. Many foreign companies have come to Viet Nam looking to set up branches and recruit IT engineers from the abundant low-cost workforce. Software giants including Microsoft, Nortel, Alcatel-Lucal, IBM, Oracle, Hitachi and NEC are among the companies that have outsourced to Viet Nam, he says. Customers, especially in Japan, are looking to Viet Nam for an alternative to India and China. Japanese companies have taken an interest in Viet Nam's potential for software outsourcing. Big-name companies like Hitachi, NEC, Sanyo, Nissen and NTT have already begun outsourcing to Viet Nam. Likewise, Japan represents a particularly attractive market for Vietnamese software outsourcers (Binh, 07)⁹

Vietnamese programmers charge less than half of what their counterparts in India make. Including overhead charges, corporate customers pay approximately \$20,000 per person per year in Vietnam, compared to \$30,000 in Russia or Romania and \$40,000 in India. With approximately 60% of the country under the age of 26, the pool of talent is growing and ensures that local software firms will continue accessing high skills at competitively lower wages for decades to come. Besides, Vietnamese education system, which emphasizes rote learning, mathematics and logic, creates good programmers.

⁹ Binh, Truong Gia is General Director of Vietnam's leading IT firm, FPT, Chairman of Vietnam Association of Young entrepreneurs, Chairman of Vietnam Software Association (VINASA)

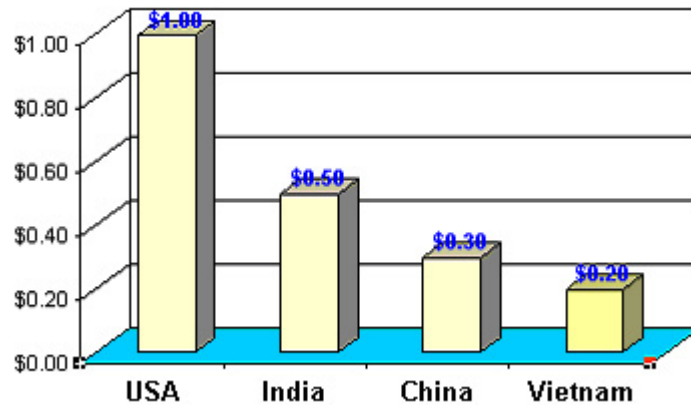


Figure 2.4: Wages for Software Professionals (Annual, USD)

In recent years, accessing to quality IT education has expanded greatly in Vietnam. A number of Western and Indian IT training companies have opened state-of-the-art training centers in Vietnam providing up-to-date IT education. In Vietnam a high degree of importance is placed on education making Vietnamese students voracious learners, diligent and receptive to this advanced training. Besides, IT companies in Vietnam retain key staff and keep project teams together for months at a time. Low rates of attrition in comparison to Indian and U.S. onshore development ensure continuity and that familiarity grows between client and contractor.

Finally, foreign investors choose Vietnam as the Vietnamese software industry is in its infancy, companies are eager to form long-term alliances. Software firms in Vietnam understand the importance of strong relationships which is why we provide excellent customer service which ultimately fosters long-standing and mutually beneficial alliances.

2.5 Summary of the Literature Review:

In this chapter, we have reviewed existing literature concerning the entrepreneurial process especially knowledge based entrepreneurship, focusing on software entrepreneurship that are relevant to our study. We begun with a discussion of previous analysis on models of entrepreneurial process.

Models of some recent significant scholars as Timmons, Bygrave and Barron have been analyzed. We found that this Bygrave's model is more complete and specific than Timmon's model. Bygrave's model includes all factors mentioned in Timmon's model, and also share entrepreneurial process model into phases from Innovation to Growth phase. Although Bygrave's model have a lot of progressive points in comparision with Timmons' model, we recognized that it's rather complicated. Reviewing the entrepreneurial process model of Baron, we found that this mentioned to all factors and phases of entrepreneurial process but clearer than two previous models.

Regarding the relation between entrepreneurship and knowledge, we recognized that entrepreneurship is an knowledge generating activity. Some ventures based mainly on relatively new (mostly academically derived) knowledge or technology like the case of software ventures.

We concluded that Software is truly a "knowledge industry" where products consist of ideas and they key assets of a company are well-trained people. And because most software ventures are based on *knowledge and intellectual property*, it must be enhanced and managed.

Chapter 3: Cases Analysis

3.1 Introduction

In this chapter, we analyze 3 cases to find the answer for the main research question: “How have successful Vietnamese software entrepreneurs emerged?”.

They are leading software ventures in Vietnam: FPT Software Joint Stock Company (FSOFT), Tinh Van Outsourcing Joint Stock Company (TVO) and CMC Software Joint Stock company (CMC Soft). We chose these cases because they are successful software venture with high rate of profit growth, over 10 years survival and have certified by International Organization for Standardization.

Regarding research methodology, we conducted interview from August, 2006 to December, 2007 with founders, project managers and staffs of these ventures. With each case, we firstly present on their outline, history and core value. We then focus our analysis on opportunities recognition process of founders, knowledge sharing and utilizing process of these ventures.

3.2 Case 1: FSOFT and Nguyen Thanh Nam

FSOFT is a member of FPT Corporation, the leading IT Company in Vietnam, to an officially established joint-stock company in 2004, during the past 19 years FSOFT has proved itself to be one of the fastest growing companies in Vietnam's software development outsourcing industry. FSOFT employed nearly 2,500 young and dynamic staffs as of October 2007.

3.2.1. Outline

About FPT Corporation

FPT is a leading IT group in Vietnam. On business, net revenue of FPT in the first six months of 2007 is around VND 5,898 billion, increasing 25% compared to those in 2006. On employees, FPT has 8,097 employees at the age of 26.91 on the average.

FPT masters technologies in all its developments applied by ISO certificates in all fields; CMMi applied for software development and it has become the golden partner of Cisco, Microsoft, Oracle, and Checkpoint. Additionally, FPT obtains more than 1,000 international technologies certificates granted by the world leading technology partners. Value-added services developed by FPT deliver and satisfy customers' and partners' demands. To date, FPT has reserved trusts placed by thousands of enterprises and consumers. Over the years, FPT has been voted as the most prestigious IT Corporation in Vietnam by Vietnam PC World Magazine's readers. FPT developed-products and services always recorded top awards of Vietnam Informatics Association, HoChiMinh City Informatics Association and Vietnam Software Enterprises Association. Positive contributions to the information and telecom industry in particular and the economy development in general, FPT deserved to receive the First Class Labor Medal granted by the State of Vietnam.

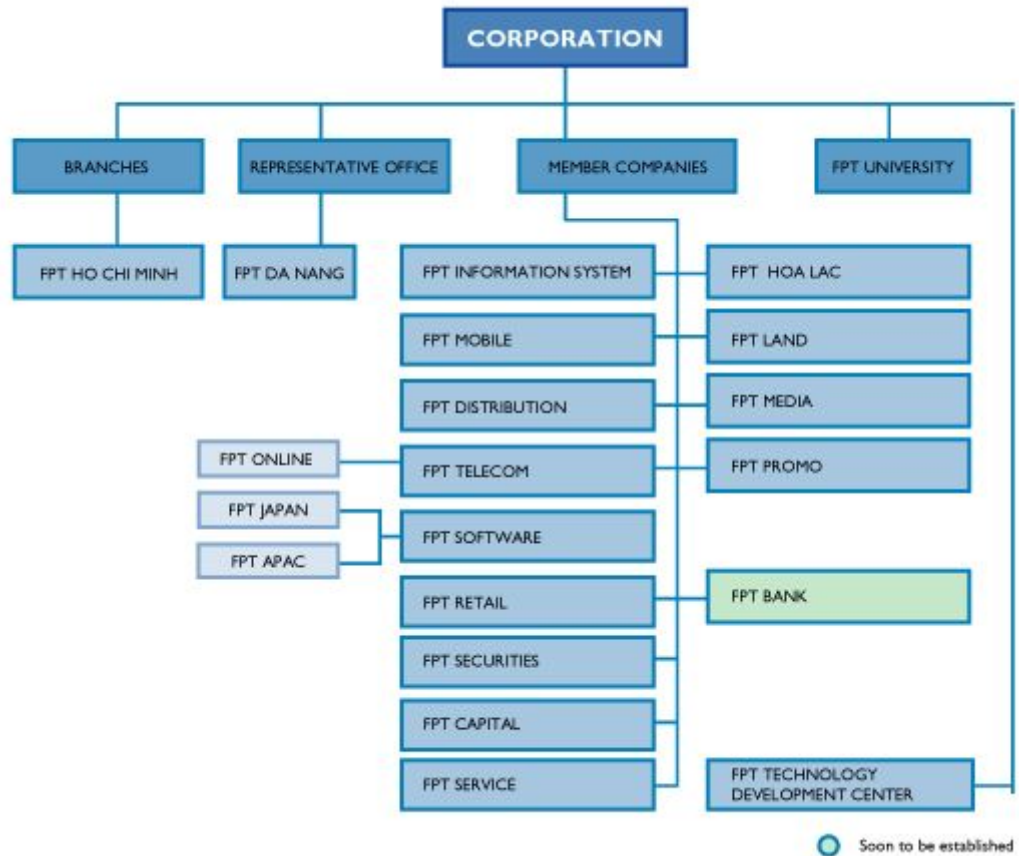
About FSOF

Business Fields

FSOF have business mainly on domains as Banking and Finance Services, Utilities, Telecom, Manufacturing, Insurance, Government and Public Services, IT Services, Retail, Infrastructure. To be successful in a fast-changing business environment like Vietnam, FSOF have continued to improve through technological

advancements, talent cultivation and infrastructure upgrading. They provide software services of the highest quality such as

Table 3.1 Organization Map of FPT Corporation



Source: FSOF Company Profile, 2007

- Software development
- Maintenance
- ERP implementation,
- Quality Assurance Test
- Migration Service
- Business Process Outsourcing
- Embedded Systems Development

Table 3.2 Milestones of FSOF

<i>Year</i>	<i>Events</i>
1998	<ul style="list-style-type: none">• started as a software division of FPT Corporation
1999	<ul style="list-style-type: none">• launched software outsourcing business
2000	<ul style="list-style-type: none">• established the first offshore Development Centre (OSDC) with Harvey Nash UK• cooperated with NTT-IT, their first Japanese customer
2003	<ul style="list-style-type: none">• officially registered as FSOF Company• partnered with IBM Japan, IBM US, Hitachi Software, Nissen and TIS
2005	<ul style="list-style-type: none">• established FSOF Japan Ltd.
2006	<ul style="list-style-type: none">• became a core partner of Hitachi Soft
2007	established FSOF Asia Pacific Pte. Ltd. in Singapore.

3.2.2 Core Values¹⁰ and Successful Determinants Analysis

FSOF have three core values that fit and balance among these values:

Young and large pool of Human Resource, Multi-Languages and International Presence. FSOF is among the 50 VN Best Employers¹¹, called to be the largest pool of software engineers in Vietnam with competitive turnover rate (8% in 2006)¹² and comprehensive training process.

FSOF recognized Human Capital is a core part in developing and executing organizational strategy, as an available resources for large scale project

¹⁰ The second interview with the founder Nguyen Thanh Nam and Group Manager Tran Xuan Khoi in November, 2007

¹¹ Ranking by Navigos Group, AC Nielsen, April, 2007

¹² FPT Software Overview, Company Profile, 2007

with highly motivation and fast learning. By providing opportunities to the entire staff to develop their work-related knowledge and skills, they expect that it will increase effectiveness and also make a richer contribution to the work of FSOF. As a software development firm, FSOF strives to be a learning organization with its responsibility to encourage and support learning throughout its constituent departments.

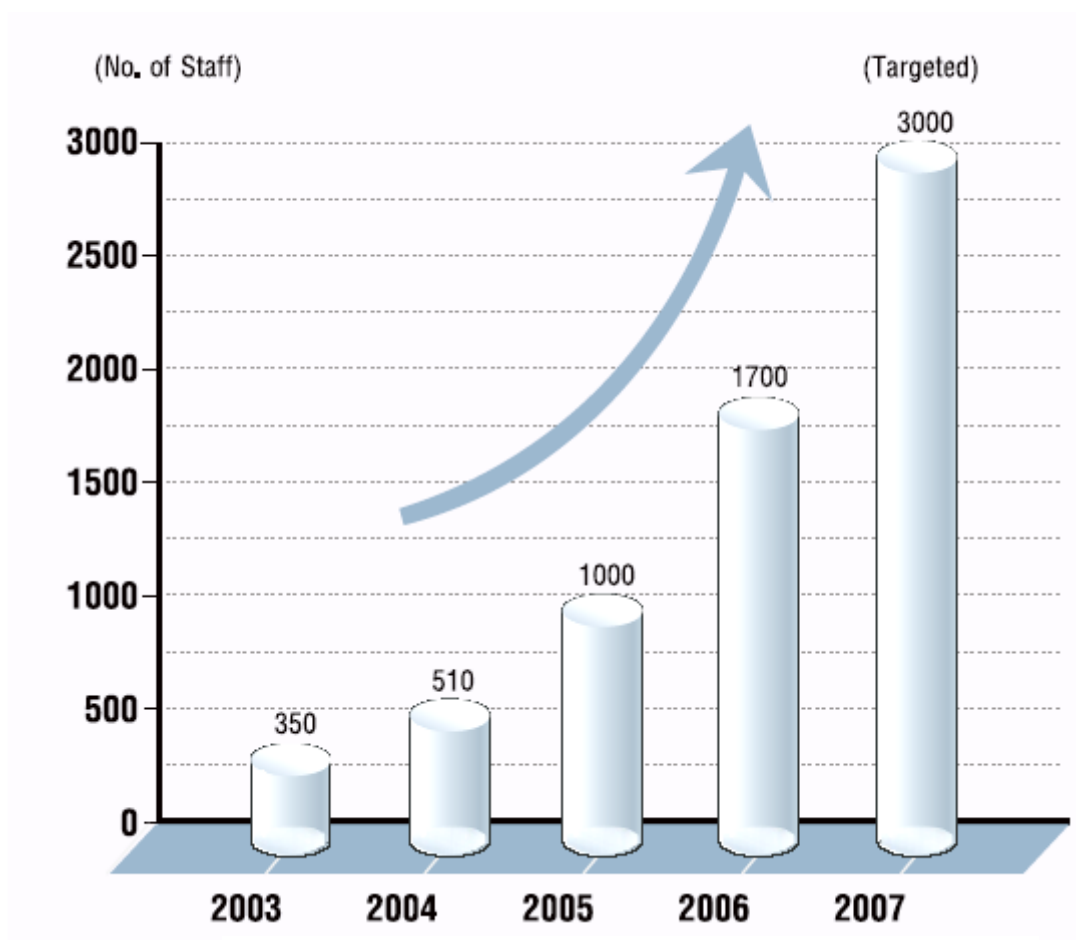


Figure 3.1 Staff Growth in FSOF

There was only 350 staffs in FSOF in 2003 but this number increased nearly 3 times every 2 years up to 1000 members in 2005 and 3000 members in 2007. With these number, FSOF is really a large pool of young, talented, IT professional

who have the ability and desire to conquer new technologies fast. 90% of these employees graduated from the three most well known IT university in Vietnam, remaining 10% graduated from series of FPT Aptech IT Professional training center.

FSOFT provides a variety of training courses as follows:

- Developer module: process, coding, unit tests
- Tester module: process, technique and tools, defect prevention

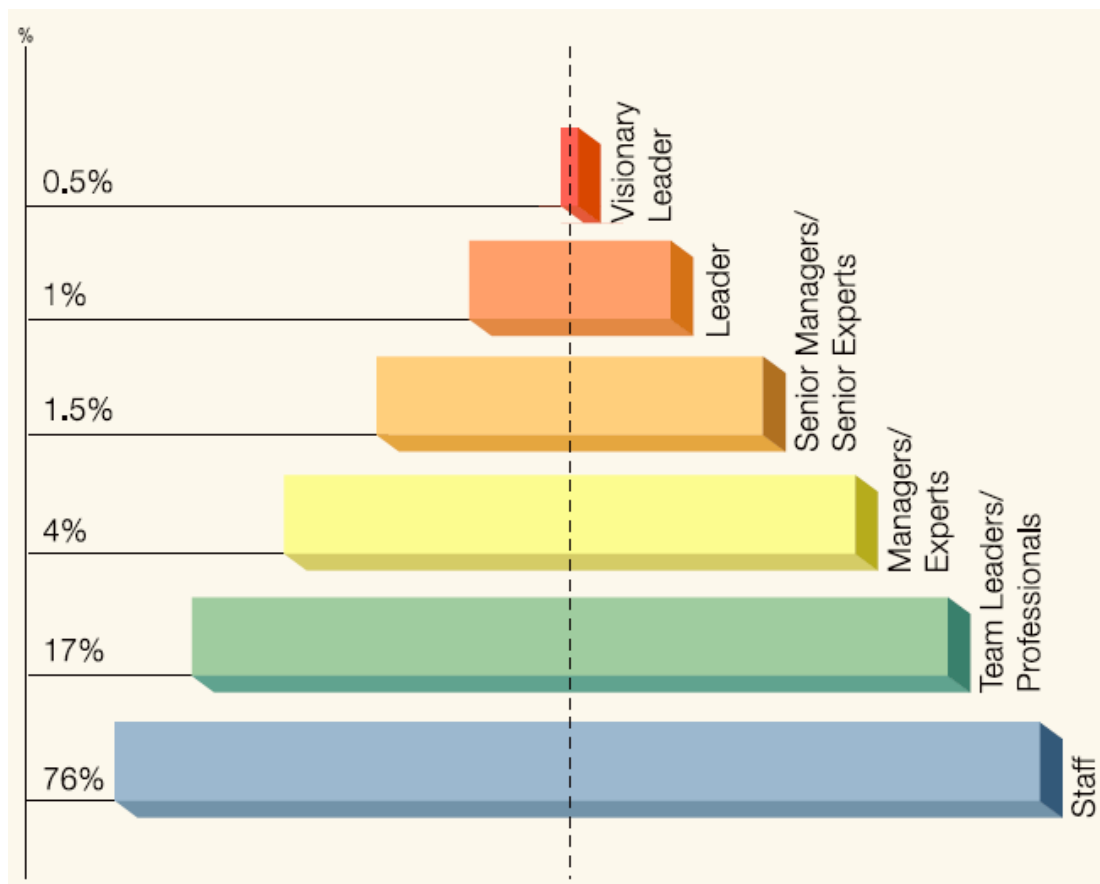


Figure 3.2 Workforce in FSOFT by Level

- PM module: quantitative management, tools
- Project-specific training

- Standard and refreshment technology courses (internal and external)
- Foreign Languages: Japanese; English (TOEFL training)
- Professional tests and certificates (e.g. Microsoft, Oracle, Japanese standards for IT engineers, etc.)

Most of staffs in FSOF can speak English. English is the most widely-used language at FPT Software. All FPT Software staff must demonstrate English fluency prior to being hired. Once hired, they are required to take the TOEFL test every three months with all test scores stored and tracked in a database. In addition, the company provides its staff with a number of English training courses as well as an English club to encourage English communication within the company.

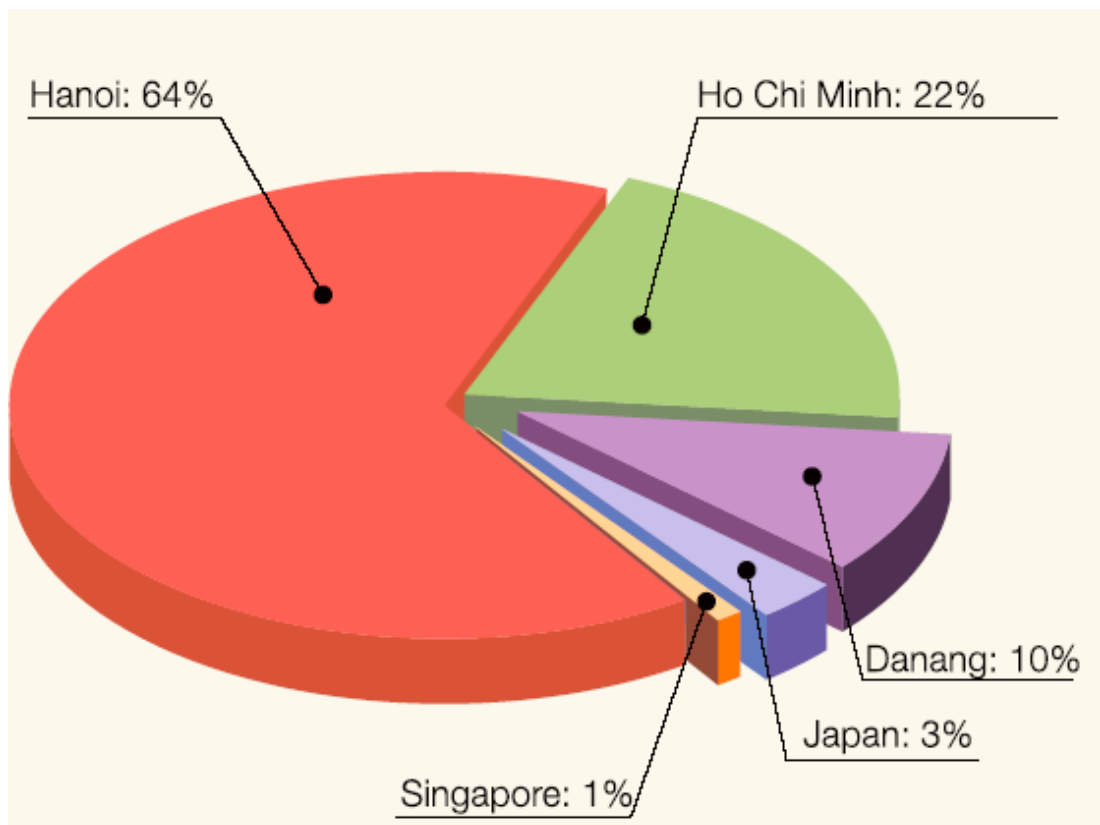


Figure 3.3 Workforce in FSOF by Region

Furthermore, many FPT Software project managers/leaders and software engineers have completed their advanced degrees in English-speaking countries. Besides, 70% can speak or to be studying Japanese while 36% can speak or to be studying French.¹³ Regarding Japanese capability, out of 1,200 FSoft staff members who can speak Japanese, the current number who have 1 kyu, 2 kyu, and 3 kyu certificates accounts for 9%, 20% and 71% respectively. They have a Japanese Quality Assurance Department who are in charge of Japanese documents. In addition, FSOFT is establishing teams of developers and testers who communicate with customers in Japanese. In order to develop the staff's Japanese capability, this company offers many Japanese training courses as well as seminars on Japanese culture.

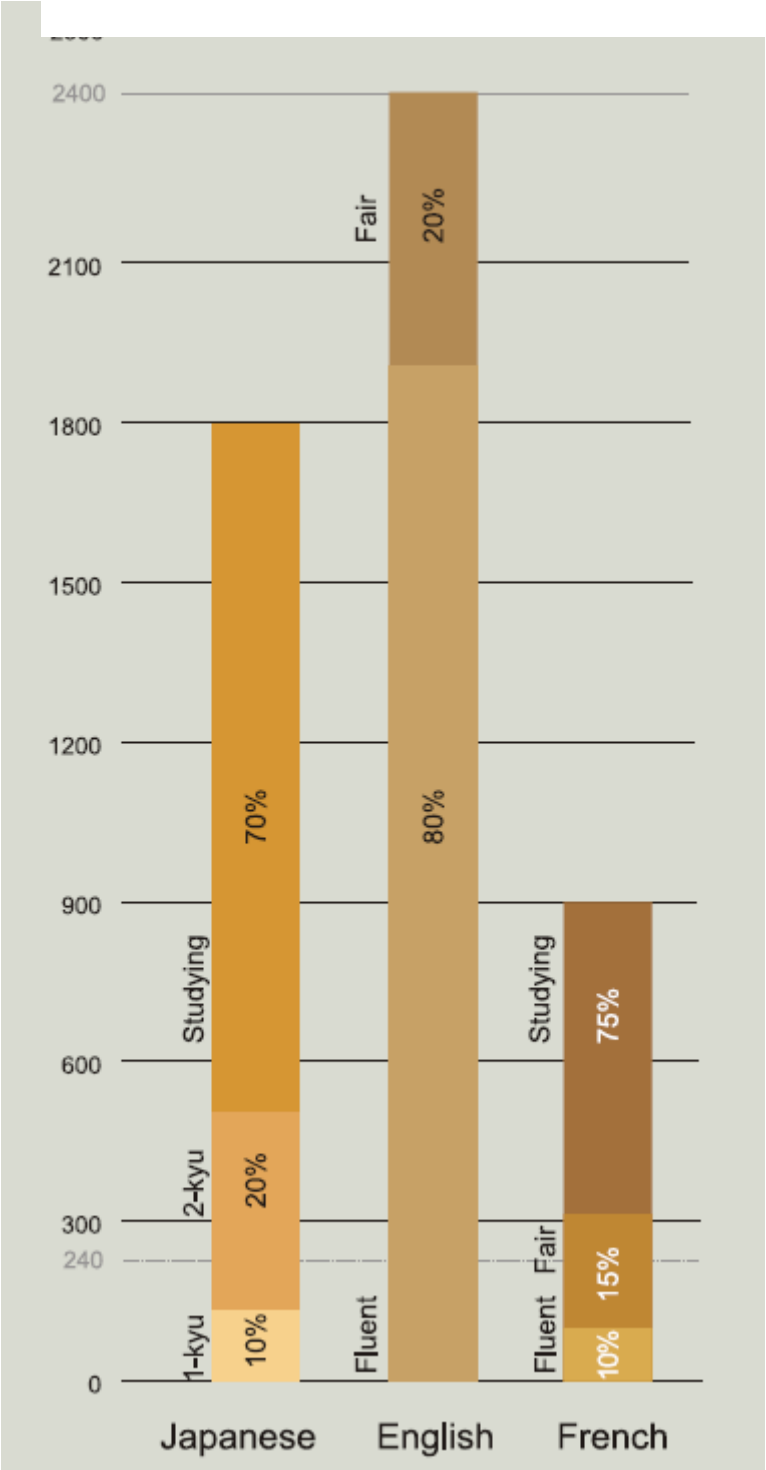
The third value core that contribute the success for FSOFT is International Presence which has been creating based on 2 above core values. Communications between FPT Software staff and customers are conducted in English, French, or Japanese. This includes all project documentation, e-mails, phone conversations, and Net meetings.

FSOFT business segmentation focus mainly on overseas market. The country that have the biggest number of customers is Japan, with 15 clients, occupies 54% revenue by market, including Argo 21, Hitachi Group, IBM Japan, Jal Infotec, JIP, Mizuho Trust Systems, Nihon Unisys Solutions, Nissen, Nomura Research Institute, NTT Group, Panasonic, Sanyo Group, Seiko Epson, Shinnitetsu Solutions, TIS. The second biggest market is Asia Pacific with 23% revenue including Chartered Semiconductor Manufacturing, IBM Singapore, Jurong Port, P&G Vietnam, Unilever Vietnam. After Asia Pacific is EU market with 13% revenue with 4 customers are Harvey Nash, IBM Benelux, IBM France, Neopost. The US market

¹³ This cited from FSOFT Corporate Profile, As of Nov. 2007

also contribute 10% revenue of FSOF with Ambient Consulting, Agilis Solutions, G2 Swithworks and IBM USA.

Table 3.3 Foreign Language Skill of FSOF Staffs



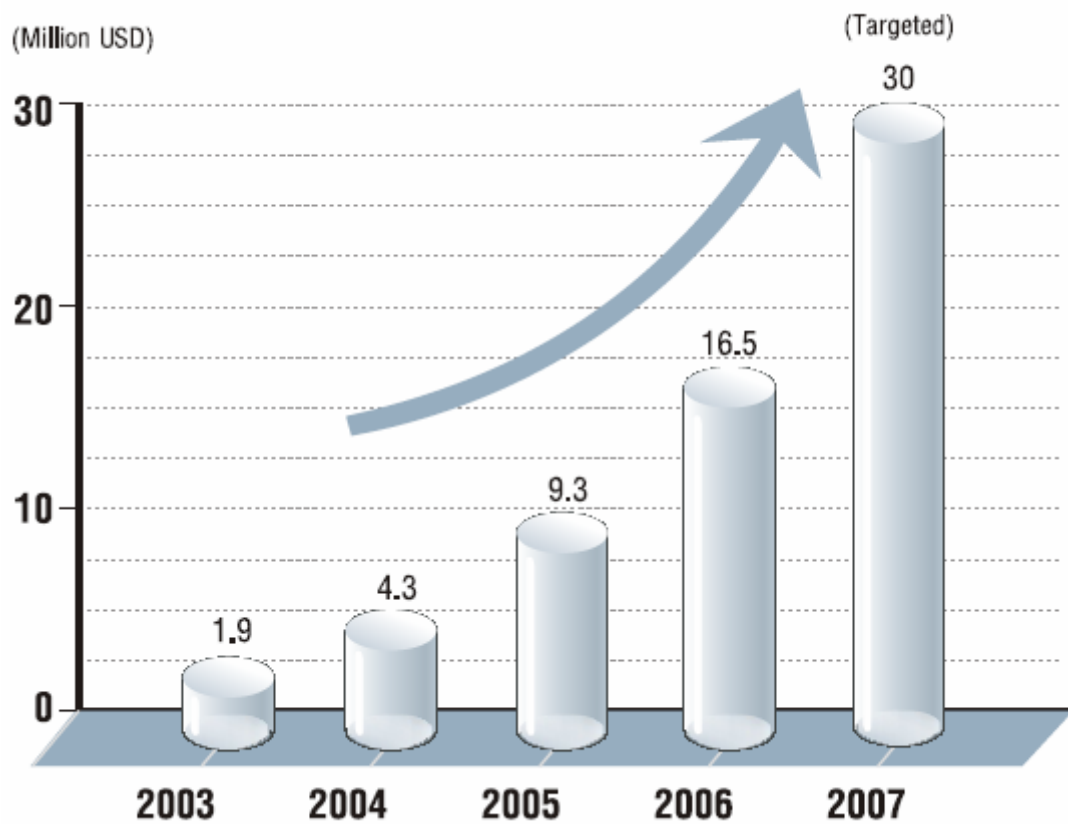


Figure 3.4 FSOFT's Revenue Growth

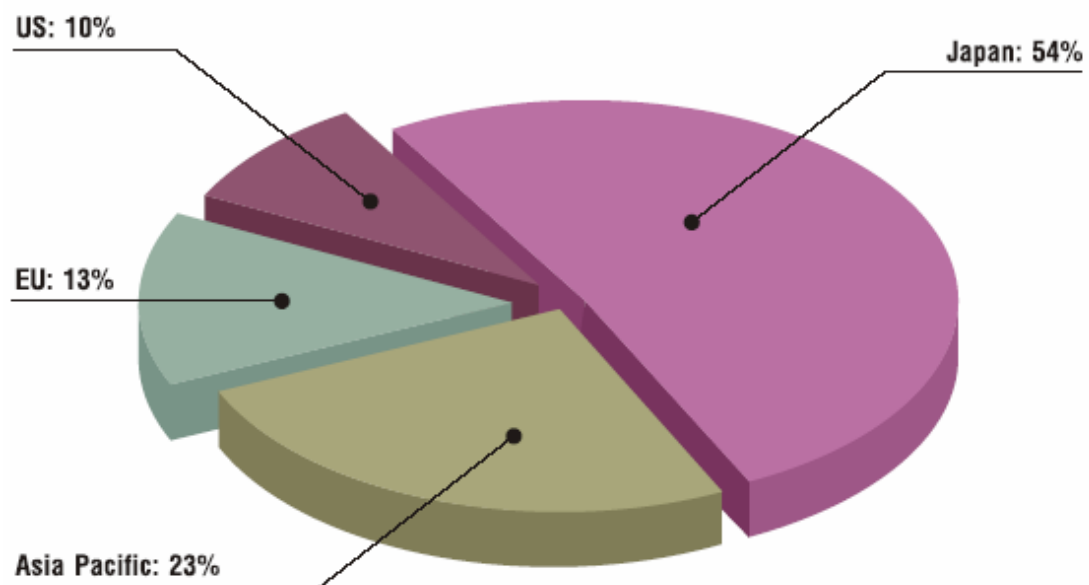


Figure 3.5 FSOFT's Revenue by Region

3.2.3 About the Founder¹⁴ and Opportunity Recognition Process

Nguyen Thanh Nam was born in 1961, married with 1 daughter, and speak English, Russian and Japanese. He got Doctor of Philosophy in Mathematics in Moscow University, Russia in 1988. After graduating, began his career at FPT Corporation, as one of the first Programmers, System Analysts and Designers. He then focused on business software in banking and enterprise management and his team participated in almost all the major computerization projects in Vietnam. In 1997, Nam and Binh¹⁵ establish FSOF from a software division of FPT Corporation. With the establishment of the FSOF division in late 1999, Nam was appointed CEO and Managing Director. Nam is the first person in Vietnam who have ideas to develop software business especially software outsourcing. He also the first person who develop internet café system in Vietnam. Starting up FSOF, Nam's biggest desire is that his venture can employ more and more staffs, and his staffs have rich life both on material and spirit. He supposed that working hard and patience are essential for anyone who work in software business. To be cheerful, honest and using "word of mouth" is his key to get success.

In terms of opportunity recognition, Nam and his co-founder passed 5 phases: pre-idea, idea exploiting, market investigating, starting up, failing and new idea exploiting. Before 1997, Nam was assigned to be Manager of software development Group in FPT Corp. Although his group was very successful and get

¹⁴ the first interview with the Founder Nguyen Thanh Nam in August, 2006

¹⁵ Binh (Truong Gia Binh) is co-founder of FSOF, now is FPT Corporation Chairman and CEO, FPT Software Chairman

profit for the Corporation, he entrusted his deputy manager to manage the group and didn't work for several months. He did nothing, just go some places, reading even joining the recruitment exam of some companies. After these time, he backed to work with new idea: starting a new venture on software exporting. He explained that his idea actually was not new because Vietnam begun to export software from 1988, when there was no computer in Vietnam, therefore, all software products were served for exporting purpose. After several years, it failed because Vietnamese software products didn't meet the oversea needs. Having idea to recover software exporting market in Vietnam, he decided to visit India software ventures and got a lot of specious experience. He started software outsourcing venture but for a long time, there wasn't any customers and he still patient to continue the venture. Without customer, everyday he and his staffs have meeting by English with the hope that it may useful in the future. After several months, FSOF have some customers, they are small sized companies of oversea Vietnamese. The venture was failed after a long time with no big projects but Nam understood that when starting venture, he forgot to consider about commercialization of software developing, an important aspect in this field. He explain that commerce in this case is the adaptability on life, and life itself is rule to estimate computer software. Recognizing this important factor, he renewed his venture and got the first outsourcing project from Japanese customer. His key to get success is when you have the first customer, please try your best to satisfy his need, make him happy. This customer have a lot of social relations and he will introduce to you. Actually, his venture has got success by this way.

3.2.4 External and Internal Communication “Ba”¹⁶

FSOFT maintains technical liaison staff in several countries worldwide. FPT Software staffs will work on-site with customer companies at the beginning of the project to ensure a thorough understanding of customers’ requirements and technical specifications (FPT Software staff may even help customer author the specifications). Overseas venture who use FSOFT’s offshore service can keep a FPT Software staff member on-site with them on an on-going basis if customer prefer. Another option is to send one of customer company project managers/engineers to work on-site with the OSDC team in Vietnam. Communications between FPT Software staff and customers are conducted in English, French, or Japanese. This includes all project documentation, e-mails, phone conversations, and Net meetings.

In terms of internal, 2-way communications, FSoft publish corporate weekly Vietnamese newspaper “Chung ta”, Fortnightly bulletin “The Cucumber”, “Flat Eye” magazine, administer FPT Software’s Intranet and Blog and broadcast the “Voice of FPT” (VOF) during company break-times. Communication facilities are Video conference with via products such as Polycom, Starboard and Meeting Plaza, Realtime Collaborator (through Webcam) and Internet with leased lines and high-speed ADSL.

FSOFT creates a lot of “Ba” to exchange their ideas, experience and all updated information inside company. Writing is essential need for communicating, sharing and express ourselves that FSOFT calls “Writing culture”. FSOFTers are encouraged (sometime to be forced) to write by any means: email, forum, internal newspaper, history. History is a very special writing way, gather a series of writing

¹⁶ the third interview with founder Nguyen Thanh Nam, group manager: Tran Xuan Khoi, Nguyen Thi Dan Phuong in Nov. 2007

like diaries of employees about their emotion, experience during the time they live and work in FSOF.

The second writing way is internal newspaper and bulletins. Beside the newspaper “Chung ta” (We) of FPT Corp., FSOF has their own newspaper “The Cucumber” which has been issuing by Vietnamese, English and Japanese. “The cucumber” was born in the context of the increasing need to use foreign language of staffs in a professional working environment with overseas customers and the need to share knowledge among sectors. The Cucumber has been encouraging every member write by English, Japanese. This is an ideal “ba” for every employees polish their foreign language. Digital “Ba” also has been created especially Intranet is a good and convenient “Ba” to exchange hottest news. Besides, forum has been attracting a lot of FSOF members with some main topics: technology, process, entertainment, discuss...

People at FPT organization, especially at FPT Software, are known as hard-working, creative, humorous and full of brilliant ideas. FPT Software is primarily considered the house of young talents and of international-standard programmers in Vietnam. People at FPT Software all share a common vision of FPT Software becoming a leading software company in Asia, and a reliable partner of leading IT companies worldwide. Corporate Culture is one of our unique strengths and it is widely recognized by almost all our visitors. The spiritual life of all staff is nurtured by a dedicated division named Youth Union, which actively organizes a range of extra -curricular activities. The Union aims to enrich the working environment and to build close relationships among staff, thereby increasing their job satisfaction. Many visitors to the company are impressed by the creative, dynamic

but also joyful working atmosphere, as witnessed by the striking displays of bulletins and caricatures along the corridors.

In short, all these above activities and “ba” create social capital for FSOFT, making them differentiate from other companies. Since the early days of its establishment, FPT Software has built a company culture intended to motivate founders in that difficult time. Up to now, all employees at FPT Software have been maintaining and developing a strong company culture. The meaning of this culture presents not only FPT spirit but also attitude of FPTers at work.

3.3 Case 2: TVO and Nguyen Son Tung

Tinh Van Outsourcing joint stock company (TVO) is a member company of Tinhvan Group – leading software cooperation in Vietnam, specialized in Software Development and Outsourcing in foreign markets. By pursuing standard quality process (ISO, CMM, ...), a strong management board and a skillful and experienced workforce, TVO offer professional, quality and cost-effective services.

3.3.1 Outline

About Tinhvan Group

Tinhvan group was founded in 1997 specialized in the field of information technology (IT).. Now they have 4 member companies:

- Tinhvan Outsourcing Joint Stock Company (TVO): focusing on software outsourcing and IT services for clients in foreign markets.
- Tinhvan Information Technology: focusing on Vietnam market to provide Tinhvan well-known package software products and solutions.
- Ho Chi Minh City branch (TVS): focusing on the Southern market of Vietnam.
- Tinhvan ERP Joint Stock Company (TVE): focusing on Enterprise Resource Planning (ERP) and enterprise solution.

Vision

Tinhvan aim to become a technology Group, whose sustainable development is based on knowledge power and humanity, is reaching out to global markets, making profits for the shareholders and communities as well as fulfilling the creativeness and competency of each member.

About TVO

Product and Service

Software Products



- Libol is an electronic and digital library solution which has been researched and developed by TinhVan Company since 1997. It has been deployed in more than 60 public libraries and university's libraries throughout the country. Libol is currently considered as the most modern and suitable electronic library solution in Vietnam
- HiStaff software is the overall solution for enterprises' human resource management, which is researched and developed by Tinh Van. This is a product applied the thinking of modern HR management of the world while still kept the conformity with Vietnam business environment. HiStaff could operate separately or integrate comprehensively with ERP system.
- **Union - University Online Solution**, is total solution for computerizing management activities in Vocational schools, Colleges and Universities which has been researched and developed by Tinh Van since 2001. Union is currently appreciated as the largest total management software which has quality not worse than other foreign software's. Its strengths are to abide by domestic universities' process of management, and suitable for actual situation and

training environment in Vietnam.

- Clever (Co - Learning EVERywhere) is one of the few Vietnamese solutions of the most modern remote training attaining the SCORM 1.3 standard. This is definitely suitable for training in universities, colleges, high schools as well as corporate, organizations and other entities.
- Tvis (Tinh Van I – Portal Solution) is one of the major products developed by Tinh Van which is able to provide powerful portals. Tvis is suitable with all kinds of websites including personal websites and large Portal with millions of information pages.
- UniVIS a small replication of Vietnamese search engine VINASEEK (www.vinaseek.com) is developed by TinhVan company works with a website or a group of websites. Nevertheless like VINASEEK, UniVIS has numerous strong points such as high speed of making index and searching; correct, sufficient and up-to-date searching result, unlimited scalability and intelligent method of dealing with Vietnam Language
- eFile is the first archives management software of Vietnam, which is researched and developed by Tinh Van. eFile is the software solution, which completely computerizes the archiving management, and it's suitable for National archives centers, agencies, organization, individuals, families, family lines. Whose the most important tasks are the management of archival records of national significance.
- The objective multiple-choice Exam is not widely popular form in VN, But it has been used widely in a lot of national exams in various countries, namely USA, Japan, Thailand ... etc. Doing multiple-choice exams in writing is traditional from. With computers, Multiple-choice tests can be done online on small scale. However, it is impossible to use this way with a large number of examinees. Thus, optical recognition and then marking these exam is the best automatic Solution. This technology is applied in marking. American TOEFL exams held in Vietnam after being brought back to America

Online services



- Vinaseek at www.vinaseek.com is the sole Vietnamese search engine in Vietnam, which has been familiar to most of the Vietnamese internet users. Vinaseek is planned to serve not only as a search tool but as a public Portal in the future by Tinhvan Company.
- Vietnamese libraries network, namely Thuvien.net designed by Tinhvan Company is the first Portal (Information gate) of Vietnam's library sector. It is an environment for cooperation among the leading libraries inside the country and bound to attract the cooperation from overseas ones.
- Web Dictionaries, which includes many databases of big Dictionaries such as English-Vietnamese dictionary, Vietnamese- English dictionary, French-Vietnamese dictionary, Vietnamese- French dictionary, Oxford dictionary ..., has been used in hundreds of large website.

IT Professional Services



- Professional IT services Outsourcing: Tinh Van not only researches and develops products and services for domestic market, but also focuses on developing and exporting, supplying IT services for overseas markets namedly USA, Japan, Denmark
- ERP consultancy & deployment: Tinhvan ERP is a professional consultant in bringing the latest models of business management and informatized business to Vietnamese enterprises particularly big cooperation. Tinhvan ERP is being Oracle certified Partner, one of three partners officially recognized by Oracle.
- Customer Software Development: As a front man in studying and developing software, Tinhvan has been providing customers with software, meeting their demands in all aspects in the best way.
- IT Consultancy : help customers define the requirements for the system then set out the master approach to build the best information system such as:

Information infrastructure building consultancy, application of software consultancy, special solutions consultant building consultancy, application of software consultancy, special solutions consultancy.

Partners, Customers and Awards

TVO has partnerships and cooperation with domestic and multinational technology giants including Oracle, Microsoft, IBM, Cisco, Intel and HP. This network of partners and suppliers enables TVO to provide the best technologies and products to customers.

Customers of TVO includes government, educational sector and enterprises (retails, e-commerce, manufacturing...). Foreign clients are US, Japan and Europe market.

TVO's contribution to the IT development in Vietnam has been recognized by the IT community. Some of their services and products have received honor awards such as Sao Khue Award by VINASA (Vietnam Software Association) and IT Golden Cups by VAIP (Vietnam Association for Information Processing)

3.3.3 About the Founder¹⁷

Nguyen Son Tung is in his late 30s, married with 2 sons, and speaks English, Russian. She has undergraduate and graduate in Vietnam and Russia. After finishing university, he worked in Network and Information Security Laboratory (NetLab). This lab belongs to The Institute of Micro Electronic- National Institute of Technological Research. In 1997, he started his first business with 2 close friends whom he knew at the Moscow University, Russia. Both her parents have almost no

¹⁷ The first interview with founder Nguyen Son Tung in TVO Office, Hanoi, in August, 2006

influence to his career. When he started up, he didn't ask his parents for advice, just lending them some money as a finance resource.

From the beginning, he and his co-founders focus their developing orientation on system integration and Network and information security software. These are quite new field in Vietnamese IT community. His business employed 10 staffs only, mainly his old friend in university. A major factor in the success of Tung is building an effective leader team.

Tung's primary reason for starting his business is simply that he wants to find a job after graduating. By chance, he met his 2 old friends who also have desire to become entrepreneurs. According to Tung, making money is his main purpose for startup venture.

Regarding opportunity recognition, Tung recalled that he has passed three main phases: gap recognition, information and resources gathering and founder team building. In 1997, he decided to start his business because he find a gap about market demand: at that time, Vietnam occurred a lot of computers but there wasn't so many computer companies supplying repairing service. He supposed that creating a venture focuses on this field was very potential. He started by building a business plan. It was difficult for him to gather all resources that need for starting up. He decided to ask 2 his friends to become co-founders. The day his venture kicked off, his office was just 12 square meters with 1 personal computer and 2 working tables. He was introduced some staffs from his friends and relatives. There were 10 employees at that time. He met many obstacles like having no management skills, no knowledge about finance management, little knowledge about market. He didn't use consulting service because he didn't think that it would be useful for his venture. The success of his

venture has mainly based on the effective *Entrepreneurial team* with 3 members.

Tung, as a team leader, is the centre to the team, as a coach and also a player. He encouraged team member learn and teach to one another and explain that it would make every run faster and better. Every member always union to deal with adversity. In short, Entrepreneurial team is the key ingredient in TVO venture's success with the most precious factors is *adaptability and communication* among team members.

3.3.4 TVO's Core Value Analysis¹⁸

As a leading IT service, solution provider and integrator in Vietnam, Tinhvan has successfully delivered many large and complex projects with highly international standards to various companies. And TVO also has been inherited the advantages of:

- Established framework and process:

Software development is controlled by applying the standard software process and quality (ISO and CMM).

- Wide-range experiences:

- ✓ Providing wide range of technology and platform to meet the strict on-demand of clients. Programmers experienced in large-scale software projects, have a strong expertise of underlying technologies, and mastering quickly the new ones as well.

- ✓ Tinhvan has achieved the technology expertise and hand-on experiences on areas of modern IT: content management technology, online services and information security through out the implementation of IT projects for many years.

- ✓ Having the capability to conceive, design, develop and deliver specifically solutions to client's demands.

- ✓ Having much experience in extensive and time-sensitive software projects covering the needs of sector verticals such as banking, financial,

¹⁸ The second interview with founder Nguyen Son Tung and TVO Manager Dao Quoc Hung in November, 2007

insurance, education, government, NGO, telecom, IT services...etc.

- Effective management
 - ✓ Board of directors has much experience in software industry for a long time.
 - ✓ Key roles have hand-on abroad experiences in the area of software development and outsourcing in Europe and US as well for many years. Moreover, working environment in TVO is considered to be composed of international standard working conditions, a diversity and mix of culture.
 - ✓ Software Project is managed by leaders who are certified in Software Project Management.
 - ✓ Young, educated, creative, and compete labor forces.
 - ✓ Large pool of dedicated, disciplined, and well-trained software engineers.
 - ✓ Ongoing technical training to members (Manager, Project Leader, Team) to keep them up-to-date with technology and technical skills.
 - ✓ Proficiency in English, Japanese, French and others.
- Intellectual Property (IP) Protection
 - ✓ TVO has implemented special practices regarding Intellectual Property Rights in order to secure use of confidential data and avoid any possibility of leakage of information. We consider it as one of the most essential parts of our job. We understand that customers and partners have undisputable rights to demand it from us and we will do our best to guarantee our all clients the peace of mind. All details and requirements of security procedures are being discussed with clients beforehand and formulated as special rules for all people involved in the project fulfillment. Our policy includes the following:
 - ✓ TVO has created a special training for all company's employees covering every aspect of IP, Internet and intranet security policy. The Guidebook for Security describes all things concerned security issues of the company and gives employees all necessary information how to comply with client's requirements.
 - ✓ Different levels of accessing for all the essential data guarantee confidentiality and security of all information given to us by TVO's partners and customers.
 - ✓ Implemented additional tools for networking security to protect TVO's operations from intrusion.
 - ✓ All TVO's employees are obliged to sign confidential agreement covering

all procedures of working with client's and partner's information and software. No breach of this agreement has been discovered so far.

✓ TVO provides the clients with all information they need to meet internal rules for security. We understand that trust is vital for successful business and can guarantee our customers that no IP leakage and security problems will arise under any circumstances.

- Production cost:

Cheap cost (less than one-fourth as much comparing to Western IT professional).

Having a compact, solid organization and optimal resource management uphold the core values of the company and bring unparalleled services to the clients.

3.4 Case 3: CMC Soft and Ha The Minh

CMC Soft is a member of CMC Group¹⁹, a leading ICT Corporation in Vietnam.

CMC Soft was found in 1996 by Ha The Minh with advanced Technology, excellent Service, assured Solution & professional Software.

3.4.1 Outline

In 1996, CMC Software Developing Centre (previous name of CMC Soft) was established with the purpose become strategy business unit of CMC Group. From the startup phase, CMC Soft has concentrated primarily on 2 market segments: developing software for enterprises and government. From 2004, outsourcing service become one of the most important targets of CMC Soft.

With the total of staffs is over 200 members, CMC Soft has been supplying software products, solutions and service in the fields of Insurance, Banking and Finance, Telecommunication, Document and Process management, Education and Training, Library Information Management. Besides software products, service that

¹⁹ CMC Group is system integrator and application developer, a leading IT group in Vietnam with 3 subsidiary companies: CMC System Integration, CMS and CMC Software.

have been created by CMC Software like CPC²⁰, eDOCMAN²¹, iLib²²...CMC Soft cooperate with foreign partners to supply consulting service, open and integrate solution with applications such as ERP²³, Business Intelligence²⁴.

Main business field:

- Package software development
- Software development in the field of Insurance, Banking and Finance, Telecommunication, Document and Process management, Education and Training, Library Information Management
- Service supplying as package software as: business, consultant, system maintain, application upgrade and training.
- Outsourcing service
- Service supplying as demand (eLearning, BPO²⁵...)
- Consulting and developing application (ERP, CRM)
- Software solution supplying

Focus Areas/Industries: Government, State-owned enterprises

Key Partners: HP, Compaq, IBM, Bull, AMP, Oracle, Invensys, Microsoft, Cisco System, Leonics, SICAD (GIS), Acer, and localized LINUX

Key customers: Min. of Justice, Min. of Interior, National Assembly, Min. of Transport and Communications, The general Dept. Land, Min. of Finance, Vietnam Posts and Telecommunications (VNPT), Electricity of Vietnam (EVN)

²⁰ CPS (CMC Property and Casualty Insurance Software) is the software products developed based on Insurance Application Architecture (IAA) of IBM

²¹ eDOCMAN is a localized document management solution issued basing on advanced technology, high security.

²² iLib is library management software with the first version was issued in 2000

²³ ERP (Enterprise Resource Planning) is total enterprise management solution which allow enterprise integrate all activities like planning, selling, stock, finance, human resource etc.

²⁴ Business Intelligence is technology solution which apply information in decision making

²⁵ BPO is business process outsourcing, is the contracting of a specific business task, such as payroll, to a third-party service provide.

Vision: In 2008, CMC Software become a software company which have products and service that attain international quality, high competitive ability in the region and the world.

Table 3.4 Milestones of CMC Soft

<i>Year</i>	<i>Events</i>
1996	set up Centre of Software Development
1997	issued eDOCman packing software, gained a lot of prizes in IT field
2000	issued library management software iLib 1.0.
2001	provided electronic library system to the National Library and Public Libraries in the whole country
2004	set up Outsourcing Department
2006	CMC Software Joint Stock Company was set up based on Centre of Software Development
2007	supplying Office software for all governmental and local organs in Vietnam.

3.4.2 CMC Soft Core Value Analysis²⁶

The factors that makes CMC Soft value are staffs, customers, creativeness-innovation, oversea partnership.

Human resource is a core part in developing and executing organizational strategy. Understand that leadership, cohesion, innovation and loyalty play important

²⁶ The second interview with founder Ha The Minh and co-founde Nguyen Trung Chinh in November, 2007

roles in CMC Soft success, CMC Soft have invested in their people and have acquired a large pool of young, talented IT professionals who have ability and desire to conquer new technology fast. Staffs in CMC Soft have knowledge in not only in IT field but also specialized in various fields such as Insurance, Banking and Finance, Telecommunication, Document and Process management, Education and Training, Library Information Management...

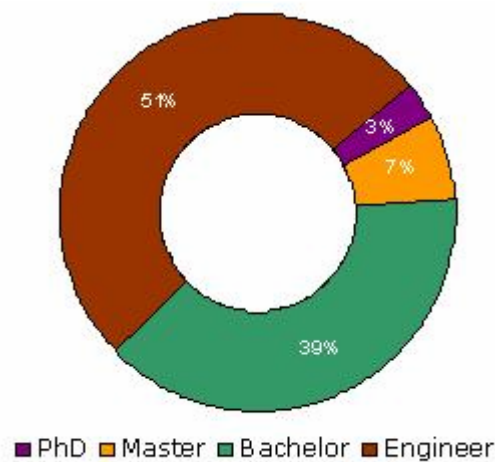


Figure 3.6 CMC Soft Human resource structure

Source: CMC Soft Company Profile, 2007

Beside human resource, CMC Soft competence is based on modern software development method that they call “Software Development Life Cycle.

CMC Soft SDLC is iterative development process based on Rational Unified Process (RUP) and Capability Maturity Model (CMM). Quality control is strictly carried out from the beginning to the after sales service stage. Quality is the top target of CMC Soft. CMC Soft received ISO 9001:2000 and plan to obtain CMMI 3 by the end of this year. Besides, software development process is strictly managed by

teams of experienced and qualified software engineers certificated by Microsoft, IBM, Lotus, Oracle and Sun.

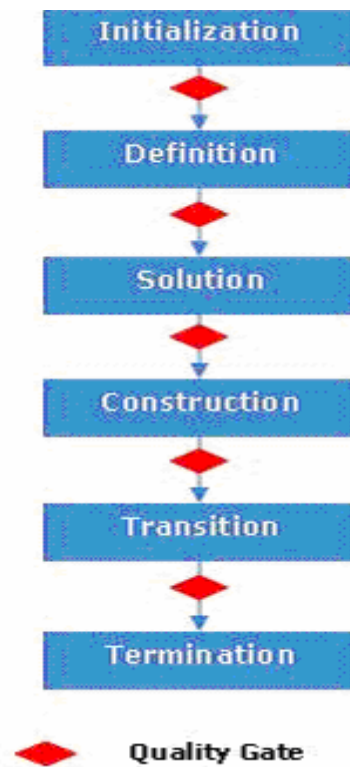


Figure 3.7 CMC Soft's Software Development Life Cycle

Source: CMC Soft Company Profile, 2007

CMC Soft have partnership and cooperation with domestic and leading oversea technology cooperation like Microsoft, Oracle, IBM, BlackBoard, WebCT, SAP, Cognos, FTS, Profitra, DMD that support CMC Soft both on technology and solution. CMC Soft have tried to utilize modern solution, technology and their creativity in solution developing and solution supplying.

Focus market segment: From the startup phase, CMC Soft's orientation has focused on supplying products and service for government and enterprises segment. Over 10 years of experience, CMC Soft has conducted some significant projects like

providing solution for management bond treasury on scope all the country, digital library solution for National Library of Vietnam, workflow and document management solution for the Communist Party Centre Office, E-commerce system for medicament selling.

3.4.3 About the founder²⁷:

The founder of CMC is Ha The Minh. He is 48 years old, married with 2 children. He was born in a family with the father is a History Professor have significant impact on his way of thinking, future and vision. Minh said that he received a lot of his father's advice when he started up his business. Minh can speak Hungarian, Russia and English. In 1976, he graduated from Polytechnic University of Hungary with a government scholarship. After graduating, he worked in Hungary Automatic Centre for 3 years. Before starting his own business in 1994, he worked in Institute of National Technology (INT) as a leader of AD Com Centre, which was assigned to develop application and spread IT to domestic enterprises.

Minh started his first business with another friend in 1993 with the name HT&NT, originator of CMC Group. His first company was very small IT company with 20 employees and now he employs over 600 people. He started his own business because he was not satisfy with present work and want to find opportunity to develop his own career.

Minh's primary reason for starting his own business was that he did not like working for a state company and he wanted to be an entrepreneur. According to Minh, profit maximization is important, but equally important is to grow

²⁷ The first interview with founder Ha The Minh in August, 2006

professionally, experience job satisfaction and having fun in running his business. At the startup phase, he hoped that with new business, he can utilize all specific knowledge that he earned in university and previous works. Besides, he desire to enlarge some more other fields like business, computer installation. He started up with 300 millions VND (210 0000 JPY) using his own money. As his view, the most important factor to get success is having good relation both with customers and administrative offices. Regarding human resource acquisition, he mainly got staffs unofficially by relationship, through introduction of relatives and friends.

The biggest challenge is misunderstanding about the market need. Minh supposed that management skill is not important factor for entrepreneurs in Vietnam in 90s, enterprises can exist and success in that period based mainly on logic thinking of founder. As his case, three factors that bring success is concentration and clear orientation, strong passion and experience from previous work.

In terms of opportunity recognition, Minh supposed that his process has three main phases: exploiting idea to startup venture, collecting information and gathering the resources. After having idea, he immediately can make it come true because he had specialized knowledge about IT and experience which he got from university and previous works. During the time he worked in INT, he was assigned to lead AD COM Centre, an independent business unit, which gather a lot of IT engineers. He met Chinh, the co-founder of CMC Group. Both Minh and Chinh have the same desire: to research and apply new technology, new products and create his own IT products. However, the model of AD COM Centre didn't allow them to develop their ideas. It was independent business unit but not a venture, and have to obey a lot of general regulations of the Institute. These urged him to start up his own business with

a more professional business model. He first set up HT&NT, an IT venture, with the hope open more business fields. One more reason that make him to start up business is he found a very potential opportunity about market. At the time he intended to startup, Vietnam has just been ended US embargo, foreign investment stimulated the domestic economic and make it develop rapidly. But the IT business had not developed enough to meet the market's need. Therefore, he decided to start an IT venture with the hope that he can continue to work at the same field with the old work, have his own business. Having ideas, he asked his father for advice and gather information related to the procedure to set up a private venture. He met a lot of difficulties at the first stage: having no management skills, no professional consultant. He explained that domestic consultants have not enough experience and if he used foreign consultants he had to pay a big amount of money which is impossible for a young venture. But the biggest challenge was the misunderstanding about the market need. In the first years, although his venture had a lot of business activities, it was known just a distributor of Acer²⁸.

3.4.4 Knowledge exchange activities in CMC Soft²⁹

For CMC Soft, knowledge as considered to be intellectual products, is centralized and shared among staffs. New intellectual products have been creating, giving more strength to the company. Knowledge has been shared and exchanged not only among staffs but also between staffs and customers. CMC Soft set up both real teams and virtual teams where every can share hottest information in company, or their experience to each other. IT solution is a proper integrated system. Similarly, CMC Soft reaches its targets by harmonizing co-ordinations among functional

²⁸ Acer is a Taiwanese multinational electronics manufacture, the third largest computer maker in the world (by sales after HP and Dell)

²⁹ The third interview with founder Ha The Minh in December, 2007

departments and teams, and among CMC Soft members. Every staff has the responsibility for not only his/her work but also for the team's success. Professional working teams with close co-operation with others are among the valuable properties of CMC Soft. Especially, *virtual teams* that have been conducted by forum allow staffs in many other sections can join together and create a quite new team. Moreover, they can share private things like hobbies, families, love stories. Virtual teams make people easier to open and closer with each other because they can have meeting whenever they want. Recently, CMC Group started to build "*Knowledge Building*" which has planned to complete next year. CMC Group have oriented to design this centre how to every members in CMC Group can share their knowledge. With this, they hope that they can develop more fields of business in IT field especially in develop outsourcing service. As plan, Knowledge Building will supply infrastructure for not only member companies in CMC Group but also for other IT venture to want to hire. Especially, 2 floors of this building will spend for well equipped conference centre with advanced technology where every group can have meetings whenever they want.

Besides, CMC Soft have create many "ba" where they can sharing knowledge with customers. They have a professional staff group who specialized in touching with customers. By working with customers, they fully understand customers' working process, priority and opportunity.

3.5 Summary of the chapter

This chapter described the results of interview contents with founder, project managers and staffs of 3 Vietnamese software ventures: FSOFT, TVO and CMC Soft, focusing mainly on opportunity recognition process, knowledge sharing and utilizing of these ventures. We found that all of them have been survived over 10 years with high rate of profit growth and high rate of new successful products and service.

Regarding founders background, all of them were educated from foreign university, which brought them a lot of new, modern ideas and different from Vietnam-educated entrepreneurs. They got success when they were around 40 years old, after 10 years starting up. At the startup stage, they were pioneers in software industry in Vietnam, especially in outsourcing service, without management skill and business model. Experience and Technical knowledge from previous work are helpful during the time they start up their own businesses.

In terms of opportunities recognition, we found that the social networks play important role for software entrepreneurs. They relied on relationship with

government official to create customer, and relationship with customer to create business opportunities.

Especially, we understood that knowledge sharing activities are more popular, active and pay attention in software ventures than any other ventures because they can utilize their product and the effectiveness of information and communication technology to support their purposes knowledge sharing. The knowledge in software ventures mainly Human and Technology knowledge which is shared both internal and external. Knowledge has been utilize mainly to create new customers and new software which bring the growth in annual revenue.

In conclusion, after making interviews with founders, managers and staffs in 3 ventures, we found some strengths that bring success for them: effective leader team, young, skillful workforce, an opened-working environment to encourage every member's working spirit and creativity. And the most important factor is that all ventures have a positive attitude to study and understand on both themselves and customer (especially foreign customers' need and their business culture).

Chapter 4: Conclusions

4.1 Introduction

In this chapter, we focus to present the overall conclusions of our study. First, the major findings are summarized through answers to the research questions. We continue to discuss on theoretical implications and provide a theoretical model to explain the knowledge based entrepreneurial process. Then, we present some practical implications for software entrepreneurs and policy makers. Finally, we conclude the study with suggestions for future research.

4.2 Answers the research questions

SRQ 1: How software entrepreneurs identified and evaluated opportunities?

All founders of these case studies identified opportunities from exchange and communication process with entrepreneur networks (partners, customers, mentors, high skilled employees...). The role of network is important in opportunity identification process. Nam, the founder of FSoft, who identified the idea to startup the first software outsourcing business venture in Vietnam emphasized that going here and there, making communication with many people is the main resource of ideas and opportunities identification. Similar to Nam, Tung, the founder of TVO, recognized opportunities to startup with computer repairing service when he communicate with the customer. His customer complained that although there were increasing number of computers in Vietnam, but there hadn't any companies

supplying repairing service, which prevent the working process and technology accession of many ventures. Minh, the founder of CMC Soft, also recognized opportunity when he touched with customers. During the time he worked in ADCOM, his previous work, he met and did business with many kinds of customers. However, by the experience and sense of working in IT field for a long time, he found that the government and business venture are very potential segmentations comparing with other segmentations.

In terms of opportunity recognition process, most of them had passed three main phases: idea exploitation, idea evaluation and decision to proceed. After identifying opportunity, they begun to gather the necessary information and evaluate opportunity. Three founders of these venture, Nam, Tung and Minh explained that the knowledge he gained in studying and experience in previous works are very useful for their opportunities evaluation process. All of them are foreign trained Vietnamese, from Russia and Hungary. They supposed that opportunity evaluation is the most important stage in entrepreneurial process. All of these ventures have been created after Vietnam started its transition from planned economy to market-oriented economy, which had a significant impact on the economic development of the country. Moreover, they startup also the time Vietnam has just been ended US embargo, foreign investment stimulated the domestic economic and make it develop rapidly. But the IT business had not developed enough to meet the market's need. Therefore, creating a venture is a good opportunity for them to make money and get rich, to satisfy their own desire and to develop IT and software business in Vietnam. Besides, they also agreed that opportunities are always along with difficulties and challenges. They have no management skills, have not enough experience and

knowledge to estimate the market need. The biggest challenge they met is the risky to be the pioneers in software business in Vietnam.

In short, all of them, with the educational and working background on IT field, identified and evaluated opportunities while trying to find one that fits their personal capability, interest, resources and goals.

SRQ 2: How have knowledge been shared in software enterprises?

We found that knowledge sharing activities are *more popular, active* and *pay attention* in IT ventures than any other ventures because they can utilize their product and the effectiveness of information and communication technology to support their purposes knowledge sharing. To find the answer for this question, we gave the interviewees some sub-questions as What kinds of knowledge has been shared, Who shares knowledge, When and where is knowledge shared, what are the problems of knowledge sharing?

Knowledge which has been shared in 3 ventures are various both on explicit knowledge and tacit knowledge. Explicit knowledge is technical documents, weekly seminar reports of each teams, customer information while tacit knowledge is leaders, managers and staffs' experience, new ideas, skills. Besides, information on personal life of staffs are shared by online diary, forum or blog. All founders answer that they found it's more difficult to share tacit knowledge because it's personal and difficult to put into words. Knowledge is sharing internalization by knowledge gathering and externalization by knowledge exchange.

They have internal and external knowledge sharing process. Internal process takes place among managers, staffs including technical documents, seminar reports,

foreign cultures, experience, new ideas, skill, daily life stories by many ba”” like Meeting (management, operation, sales, customers), training and experience exchange course, seminar, weekly newspaper, internal radio, music band, virtual “ba” (email, intranet, dedicated database system, hotline, online clubs). External process takes place among leader, manager, staff with partners, customer and public. Besides, FSOF have some other sole knowledge sharing tools like FSOF Leader Institute for Project Managers, Mentor/Mentee Program.

Founders emphasized that their knowledge sharing activities has been not really effective and need more efforts. It remains a lot of problem because staffs don’t want to their especially their tacit knowledge. They don’t see the importance and usefulness of sharing their ideas with others. Moreover, they are often lack of trust, and not confident to give their ideas, explaining that they are afraid to blame on when some one conduct their idea and fail. Besides, Information and Knowledge management takes time and other resources, require managers dispose and sort to get necessary knowledge. Sharing by virtual “ba” also cause miscommunication. Another problem is that some of them are so busy with their duty work, their project and private life that they couldn’t manage some more spare time on gathering and putting their ideas into words. Therefore, leaders and managers in these venture are making their effort to encourage their knowledge sharing activities.

SRQ 3: How has knowledge been utilized in software enterprises?

The concept of knowledge utilization in 3 cases ventures is still very narrow. Knowledge has been used to create new foreign customers by knowledge attained in sharing process and social networks (FSof), to create successful products: the sole

Vietnamese search engine (www.vinaseek.com, TVO), eDocman (the first Document management software, CMCSOFT) and to avoid mistakes preventing working effectively of project managers (Mentor/Mentee Program).

Customers have been created by ability, relationship and experience of manager and leaders. Social network is very important to making connection with government officials, partners, mentors, Vietnam software association, Vietnam Chamber of Commerce and Industry which bring them many opportunities to create customers. All founders of three cases replied that relationship with government officials play the most important role to connect with domestic customers, mainly state companies.

These ventures use a lot of channel to find foreign customers like referent materials, VINASA, Jetro, consulting cooperation like JV-IT. After receiving quite new inquiry, they conduct the project and then make it become one of their new service to marketing with another customers.

MRQ: How have successful Vietnamese software entrepreneurs emerged?

The number of successful software entrepreneurs especially in outsourcing field has been increasing due to a lot of subjective and objective reasons. Some indicators to evaluate the success of 3 cases are the increasing rate of profit growth, over 10 years survival, the rate of commercialized products and the low turnover rate (below 10%).

Objective reason are opportunities to attract foreign investment (the lack of IT engineers, the need to increase productivity, reduce cost price in developed countries, the unstable in politic and terror in many countries). Recently, in some

developed countries like Japan have to face up with the lack of IT engineers. They find solution to offshore with some developing countries. India and China are main offshore partners of Japan, but recently, they move a part to Vietnam to share risky and to increase the politician relationship with Vietnam. This is one of the objective reason to make outsourcing service developing in Vietnam. Some subjective reasons are the effective leader team, braveness of entrepreneurs to be pioneers in this field, young, skillful and abundant workforce, an opened-working environment to encourage every member's working spirit, union and creativity, the ability to find suitable market.

For the case of outsourcing ventures, they first setup group that can working with foreign partners (speak foreign language, understand foreign partners working way, foreign culture). After that, they find customer through reference materials, VINASA, Jetro...or some consulting companies like JV-IT. The next step is conduct Pilot project effectively.

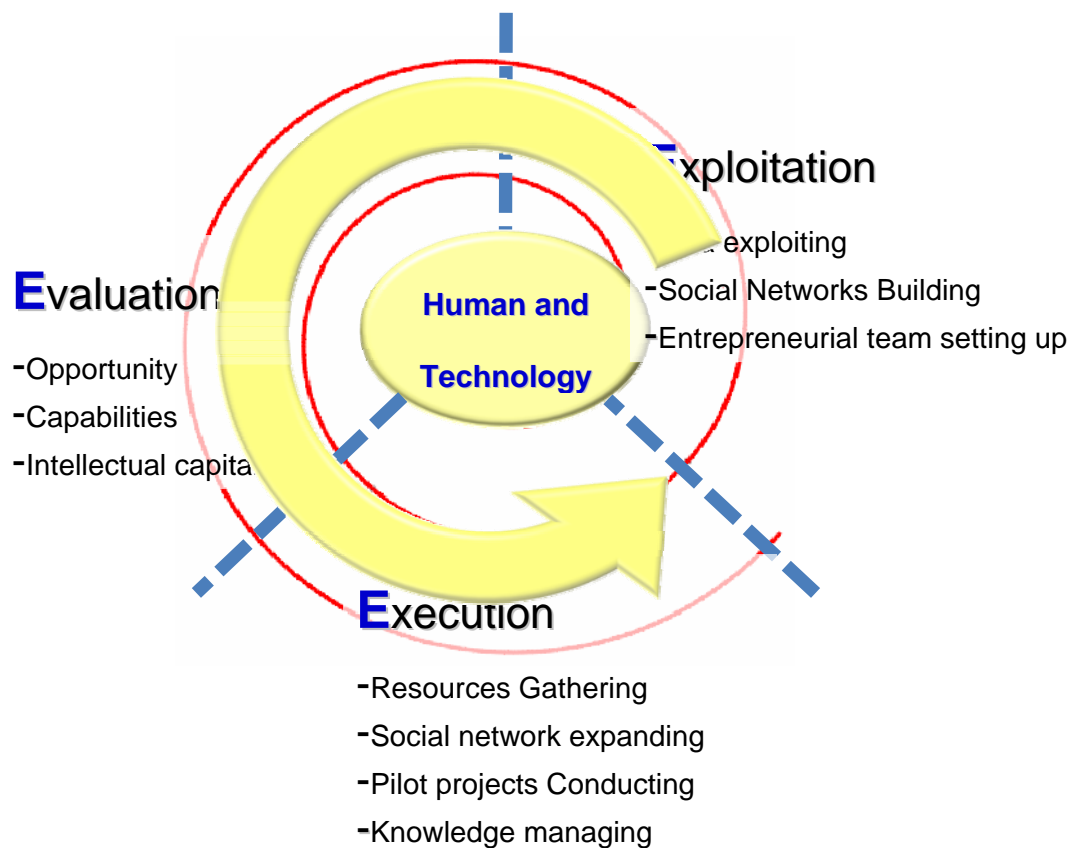
However, most of successful entrepreneurs in this field have not conducted market research. They answered that they have not enough resource to conduct this process. At first, they found some customers by unofficial relationship, tried to satisfy their need, and build their brand name on the old customers. Starting up venture, they have no management skills, no consultants. The popular process is action, fail, get experience and renovation.

4.3 Theoretical implications

The main theoretical implication of this study is a model of knowledge based entrepreneurial process with 3 main phases: Exploitation, Evaluation and Execution (see Figure 4.1). The first phase related to opportunity recognition, a

central and unique component of entrepreneurship and also a key step of entrepreneurial process including pre-idea and idea exploiting. Pre-idea mentions to the experience, technical and general knowledge of the entrepreneurs which influence to their decision making on personal vision, business vision. The model suggest that entrepreneurial idea should fit the entrepreneurs' goals, capabilities, interests and resources. After this phase, entrepreneurs gather information and start to evaluate the opportunities. It's time to look to the environment and determine if it is a good fit for the marketplace. This phase comprises of internal and external analysis, strategy development, and planning allows to built the right model and prepare to implement the idea. The next phase is execution, which entrepreneurs gather necessary resources, submitting for business license and startup documents.

At the centre of the model is the Venture's core asset including Human and Technology knowledge. And all these phases are processed in a spiral.



3E Model of the Knowledge Based Entrepreneurial Process

4.4 Practical implications

Our research purpose is to make recommendations for both successful software entrepreneurs and policy makers. Almost IT ventures in Vietnam are small and medium size with small scale and limited capability. To match with this context, there are three key works should have been done to get success. First, they must setup or reinforce IT infrastructure for themselves successfully. It means that software ventures firstly need apply the achievement of Information and Technology successful. Secondly, IT or software venture need “strategy bridges” means potential and big projects to power up. Thirdly, when doing business with foreign customers, software venture need invest in market research to study on foreign customers’ need

and business culture. Besides, some successful entrepreneurs suggested that idea often occurred in communicating process. Going many places, meeting many people are good “ba” for exploiting ideas. Moreover, they should create a working environment to encourage knowledge sharing among staffs. Regarding knowledge based entrepreneurial process, they should manage their ventures follow four steps as below:

1. **Step 1:** Identify and evaluate the role of knowledge in the firm
2. **Step 2:** Identify the expertise, capabilities, and intellectual capital that creates value in the form of products and services.
3. **Step 3:** Create a plan for investing in the firm’s intellectual capital and exploiting its value while protecting it from leakage to competitors.
4. **Step 4:** Improve the knowledge creation and sharing process within the new venture

Besides, further improvements on government policies should have been done. The information related to laws, policies and potential changes should be more readily available, through channels such as business associations, newspapers, the internet and other public media. In terms of accessing to finance, government should improve targeted policies that complement its broader economic reforms and efforts to liberalize the banking sector. Simplifying the loan application process would be a good place to start. Entrepreneurs suggested that the government encourage financial institutions, particularly private ones, to lend more to enterprises. On the other hand, improving entrepreneurs’ access to training in the areas of financial, accounting and management would greatly improve their capacity to manage cash flow. Besides, government should public all information relating on IT projects to all ventures sufficiently and simultaneously. Finally, entrepreneurs believe that the government

should put higher priority on the national human resources development by reforming the existing education system.

4.5 Suggestions for future research

In this research, we found that software industry especially software outsourcing development is concerned by many nations as a good target growth industry and a competitive weapon. Some emerging nations which develop outsourcing service successfully are China, India, Ireland. Therefore, we intend to conduct a comparative study on software outsourcing model of Vietnam and China, India or Ireland to see whether our country, Vietnam can apply successful experience of these countries.

This study focus on knowledge sharing and utilizing of software venture. Also important is the study of organizational learning and knowledge creating that are really important and concerned by high tech ventures. For such a study, we intend to study on knowledge management in ventures, mainly focusing on organizational learning and knowledge creating.

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Appendix

SOME TYPICAL SOFTWARE OUTSOURCING VENTURES IN VIETNAM

1. FPT Software

Contact person: **Bui Hoang Tung (Business Development Manager)**

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Fax: +84(4) 8336743

Email tungbh@fpt.com.vn

Contact Address	HITC Building, Xuan Thuy, Cau Giay, Hanoi
Website	www.fpt-soft.com
CEO	Nguyen Thanh Nam
Year of establishment	1999
Total number of employees	700
Number of programmers	520
Major Customers	IBM Japan, IBM France, Harvey Nash (UK), Agilis Solutions (US), Ambient Consulting (US), NTT-IT (Japan), Hitachi Software (Japan), Sanyo Electric (Japan), NEC (Japan), TIS, Tokyo Gas Information Network (Japan)

	SILVERLAKE (Malaysia).
Skill Sets	<p>- Database/DB Front End skills: Btrieve, CIndex, Clipper, DB2/400, dBase, Fox, Gupta SQL, Informix, MS Access, MS Foxpro, MS SQL Server, Oracle 7, Oracle 8, Oracle 8i, Oracle 9i, Sybase</p> <p>- Hardware Platform skills: AS/400, DEC Alpha, HP, Intel PCx86, IBM RS/6000, Silicon Graphics, SUN SPARC Station</p> <p>- Software Platform skills: AIX, CP/M, DEC VMS, Linux, Windows 9x, Windows NT, OS/2, OS/400, UNIX</p> <p>- Networking skills: APPC, Ethernet, IBM LAN Server, IPX, LANtastic, Netbios, Novell NetWare, Novell NetWare 4.x, SNA, TCP/IP, Token Ring, X.25</p> <p>- E-business skills: Domino Web Server, Microsoft .Net, Commerce Server, Lotus Notes Appl. Dev, Microsoft IIS, Netscape Commerce Server, Silver Stream, WebDev, IBM. Websphere</p>
Operating Systems	UNIX, Solaris, HP-UX, Linux, Microsoft Windows
Languages	ActiveX, Assembler, COBOL, C, C++, Delphi, Lisp, Lotus Script, MS Visual Basic, Pascal, Perl, PHP, Power Builder, Python, RPG/400, XML, .NET, C#, CGI, FORTRAN, HTML, Java, Java Script
Other expertise (if relevant)	- Special Certificates: AIX System Support (6 persons), CCNA (23 persons), CCDA (3 persons), MCP (135

	persons), MCSD (6 persons), MCSE (5 persons), OSP (4 persons), RS 6000 Solution Sale (2 persons), CCNP (6 persons), Cisco# (18 persons)....
Quality management system (if relevant)	ISO 9001:2000; CMM Level 5
Share of last year's offshore outsourcing revenue versus last year's total revenue"?	100%
Share of offshore outsourcing from North American market	8%
Share of offshore outsourcing from European market	13%
Share of offshore outsourcing from Japan market	56%
2003-2004 revenue growth rate	100%
Testimonials	<p>Werner Goeminne, Managing Director, Europe and Asia, Harvey Nash</p> <p>"We are very happy with FPT Software because they not only provide high-quality software development services but also have proved to be an absolutely reliable</p>

	<p>business partner. With the confidence and values they are giving us, we are more focused and grow faster."</p> <p>Koh-ichi Osada, Technical Staff, IBM Japan/Printing Systems M&D, Asia Pacific, Technical Operations</p> <p>"We highly appreciate the devotion, flexibility, and hard-work of every team member and of FPT Software's management."</p>
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2. TMA

Contact Address	<p>111 Nguyen Dinh Chinh St., Phu Nhuan Dist., Ho Chi Minh City</p> <p>Tel. 84-8-9902621</p> <p>E-mail: nhle@tma.com.vn</p>
Web site	www.tmasolutions.com
CEO	Bui Ngoc Anh
Year of establishment	1997
Total number of employees	520
Number of programmers	500
Major Customers	<p>Nortel Networks (Canada, USA)</p> <p>Lucent Technologies (USA)</p> <p>NTT-Data (Japan)</p>

	<p>Critical Path (USA, Canada, Ireland)</p> <p>Telephony@Work (USA)</p> <p>EasyLink (USA)</p>
Skill Sets	<p>Telecom/Networking/Data Communications</p> <ul style="list-style-type: none"> - Telecom switch management software - Network management software - Call center software - Web switch security - Soft-switch / CTI server - High speed IP switch <p>Test Automation</p> <ul style="list-style-type: none"> - Silk - WinRunner - QA Run <p>Messaging Technologies</p> <ul style="list-style-type: none"> - Microsoft Exchange / Outlook programming - IBM Domino / Lotus Notes programming - SMTP, iMAP, vCard, vCal, iCAL <p>Java / Open Source</p> <ul style="list-style-type: none"> - JSP/Servlet, Java Beans - JavaNetworking, RMI, CORBA - J2EE, Web Services - Linux, Open Source solution <p>Web / Internet</p>

	<ul style="list-style-type: none"> - JSP / Servlet - ASP / .NET - PHP, ColdFusion <p>Microsoft Technologies</p> <ul style="list-style-type: none"> - ASP, COM, DCOM - VB, VC++, .NET - Win32 API, MFC, ATL <p>Embedded / Wireless</p> <ul style="list-style-type: none"> - VxWorks / Symbian - WML/PocketPC/RFID
Operating Systems	UNIX, Solaris, HP-UX, Linux, Microsoft Windows
Languages	Assembly, C#, C, C++, Java, ASP, PHP, Visual Basic and Perl
Other expertise (if relevant)	
Quality management system (if relevant)	
Share of last year's offshore outsourcing revenue versus last year's total revenue"?	100%
Share of offshore outsourcing from North American market	90%
Share of offshore	Nil

outsourcing from European market	
Share of offshore outsourcing from Japan market	10%
2003-2004 revenue growth rate	30%

From Alex Pierson, Vice President, Nortel's Enterprise Business Networks Division,
CIO Magazine, 8 Nov. 2001

"We feel very confident outsourcing to TMA. The skill-set of their best developers is on par with anything in the United States and India".

From Hung Truong, Engineering Director, VitalSuite/NOS, Lucent Technologies,
Dec. 2003

"TMA has been able to learn new technologies very quickly, adapt nicely to Lucent's Quality Management Software processes, leverage the time zone differences and in the process help optimize our time-to-market".

From Frank Nguyen, Engineering Director, Messaging Services, Critical Path, May
2003

"TMA has delivered a number of Critical Path's outsourced projects on-time and on-budget. Our confidence in TMA's ability to deliver has prompted us to establish an Offshore Development Center (ODC) with TMA as our partner of choice".

3. PSV

Contact Address	111D Ly Chinh Thang St., District 3, Ho Chi Minh City Tel: 84-8- 848 1788 E-mail: info@psv.com.vn
Web site	www.psv.com.vn
Managing Director	Ngo Hung Phuong
Year of establishment	1995
Total number of employees	350
Number of programmers	315
Major Customers	<ul style="list-style-type: none">- Outstart Inc. (USA)- RWD Technologies, Inc. (USA)- CBM Technologies, Inc. (USA)- Witness Systems (USA)- Third Millennium Healthcare Systems Inc. (USA)
Skill Sets	<i>1.4.1.1 Solutions & Architectures</i> <ul style="list-style-type: none">- Web-based Applications- Client/Server Applications- Online Training- E-Commerce Telecommunications <ul style="list-style-type: none">- Call center software

	<ul style="list-style-type: none"> - Soft-switch / CTI server <p>Test Automation</p> <ul style="list-style-type: none"> - WinRunner - Quick Test Pro - Load Runner - Astra Load test <p>Middleware & Web Services</p> <ul style="list-style-type: none"> - CORBA/IIOP - SOAP - COM/DCOM - JINI - Sun Open Net Environment - MSMQ/JMQ - Microsoft Transaction Server - .NET Framework - J2EE/EJB <p>1.5 Web Servers and Application Servers</p> <ul style="list-style-type: none"> - IIS - Silver Stream Application Server - MS Site Server Comm. Edition - WebSphere Application Server - BEA Weblogic - Apache Web Server - iPlanet Application Server <p>Database and Data Warehousing</p> <ul style="list-style-type: none"> - Oracle 8i/9i - MS SQL Server 7.0, 2000 - MySQL - Sybase - Progress - DB2
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	<ul style="list-style-type: none"> - Data Warehousing/OLAP
Operating Systems	<ul style="list-style-type: none"> - Windows Platform: Win 9x/NT/2000/XP/2003 - Sun Solaris; Linux; Apple
Languages	<p>HTML/DHTML</p> <p>PERL, XML/XSL, WML, ASP/ASP.NET, VISUAL</p> <p>C++/MFC/C#, Visual Basic/ VB. NET, Java Script/ VB</p> <p>Script, Java, JSP, Servlet, EJB, PL/SQL</p>
Other expertise (if relevant)	<p>MCSD: 8; MCSD. Net: 6; MCDBA: 3; MCSE: 4; MCP: 12; CJP: 22; CWCD: 1; OCP: 2; OOAD: 1; OCA: 2;</p>
Professional Certificates achieved by staff	<p>PMP: 1</p>
Partnership & Achievements	<ul style="list-style-type: none"> - Microsoft Certified Partner; - IBM Certified Partner; - BEA Partner; - SoftSim, an e-Learning software product developed for e-Learning company OutStart, Inc., was received the Gold Medal Award in the Innovative Technology category at the Excellence in e-Learning Awards program in Oct 2002, which presented by brandon-hall.com, one of the U.S. e-Learning industry's leading research and consulting firms.
Quality management system (if relevant)	<p>SEI - CMM Level 4,</p> <p>November 2003</p>
Share of last year's	<p>100%</p>

offshore outsourcing revenue versus last year's total revenue"?	
Share of offshore outsourcing from North American market	100%
Share of offshore outsourcing from European market	0%
Share of offshore outsourcing from Japan market	0%
2003-2004 revenue growth rate	86%
Testimonials	

Testimonials of PSV:

From Ed Murray - Senior Vice President of Witness Systems (2004)

"After working with Paragon and seeing the high quality of their development resources, and proven methodology, we have expanded our partnership. Paragon has ramped a large team that continues to deliver quality product in a timely manner. We are very pleased with our relationship, the quality of our team in Vietnam, and look forward to working with them for many years in the future".

From Jonh Holyoak - Director of Product Management of Third Millennium

Healthcare Systems Inc. (2003)

"We have partnered with Paragon Solutions on multiple large projects. They have met our aggressive deadlines and have been flexible through their iterative development approach. We appreciate the commitments of our team in Vietnam and their customer driven approach to making each project a success."

4. SilkRoad

Contact Address	3rd Floor, e.town, #364, Cong Hoa Street, Tan Binh Dist, Ho Chi Minh City Tel: 84-8-810 6200 Email: shekhar.bhusannavar@silkroad-net.com
Web site	www.silkroad-net.com
CEO	David Appleton
Year of establishment	1995
Total number of employees	400
Number of programmers	100

Major Customers	PowerPhone Inc. (USA) IPC Information Systems (USA) SKYPATH NETWORKS (USA) Aglow Technologies Inc (USA) Private Business Networks (CANADA) CMG Asia (Hong Kong) Cantor Fitzgerald (UK) Critical Hosting (UK)
Skill Sets	<p>Strong focus on feature rich applications with Java, Microsoft .NET, IBM/WebSphere and Lotus/Domino as key technology platforms.</p> <p>Strong software development process covering full development lifecycle assessed to CMM Level 3 by Reuters and DHL assessors.</p> <p>IBM and Microsoft Partner.</p>
Operating Systems	Microsoft Windows, Unix/Linux
Languages	Java, All Microsoft Visual Studio languages
Other expertise (if relevant)	
Quality management system (if relevant)	CMM Level 3
Share of last year's	95%

offshore outsourcing revenue versus last year's total revenue"?	
Share of offshore outsourcing from North American market	55%
Share of offshore outsourcing from European market	10%
Share of offshore outsourcing from Japan market	Nil
2003-2004 revenue growth rate	72%
Testimonials	

From Kim Thoo, Vice President, Aglow Technologies, Inc. USA

"SilkRoad has done a great job for our customer using WebSphere Commerce Suite. Their programmers and project managers and technical people are equal to or better than those in the USA"

From Don Winchell, President, Private Business Networks, CANADA

"These guys are amazing...I mean it...really cool stuff. The fixes are just pure gold. No screw-ups yet to report. I have looked at your work, functionality, coding techniques and project management/business

relations and am very happy with what I see."

5. Global Cybersoft Vietnam

Contact Address	123 Truong Dinh St., Dist.3, Ho Chi Minh City Tel: 84-8-9321077 E-mail:chi@globalcybersoft.com
Web site	www. globalcybersoft.com
CEO	Hunt Mac Nguyen
Year of establishment	2000
Total number of employees	250
Number of programmers	
Major Customers	IBM(US) Yokogawa Electric Information (Japan) TTK (Japan) Esmertec (France) 6 Wind (France)
Skill Sets	Programming Language Assembly, C, Active X, Visual Basic, Power Builder, :Perl, ASP, C++, CGI, CORBA, HTML, Java, Java Beans, Javascript, JSP, PHP, UML, XML, and C# Database/DB

	<p>Front-end/File access</p> <p>DB2 Universal DB, Informix, MS SQL Server, ODBC, Oracle 8, Oracle 8i, Visual Age, JDBC</p> <p>Hardware Platform</p> <p>Intel PC X86</p> <p>SUN SPARCStation</p> <p>Software Platform</p> <p>AIX, Linux, Motif, MS DOS, MS Win95/98, MS Window NT, OS/2, OS/370, OS/390, UNIX, X-Windows, VM</p> <p>Network</p> <p>APPC, CICS, Ethernet, MS Networks, SNA, TCP/IP, Token Ring, X.25, X.400</p> <p>CRM, ERP</p> <p>SAP, SAP R2/R3 consulting, ABAP/4, PeopleSoft, Baan</p> <p>Wireless technologies</p> <p>- Platform: Palm OS, MS Pocket PC (Window CE), SYMBIAN EPOC32, J2ME</p> <p>- Standard: WAP, MS Pocket IE, IEEE 802.11, Bluetooth</p> <p>Groupware platform</p> <p>Lotus Notes Appl. Dev</p> <p>E-business (including webserver)</p> <p>WebLogic (BEA Systems), Microsoft IIS, IBM WebSphere App Server, Lotus Domino Web Server, IBM WAS</p> <p>Commerce Suite, IBM Net.Data</p>
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	System administration MS BackOffice, Config.Mgmt and/ Version Control, Team Connection, Messaging & Queuing, MQ Series
Operating Systems	UNIX, Solaris, HP-UX, Linux, Microsoft Windows
Languages	Assembly, C#, C, C++, Java, Active X, ASP, HTML, Java Beans, UML, XML, JSP, PHP, CORBA, CGI, Visual Basic, Power Builder, Perl and Javascript
Other expertise (if relevant)	
Quality management system (if relevant)	
Share of last year's offshore outsourcing revenue versus last year's total revenue"?	100%
Share of offshore outsourcing from North American market	20%
Share of offshore outsourcing from European market	20%
Share of offshore outsourcing from	60%

Japan market	
2003-2004 revenue growth rate	200%

6. Quantic Ltd.

Contact Address	104 Dien Bien Phu St., Dist. 1, Ho Chi Minh City Tel. 84-8-8204308 Fax. 84-8-8204316 E-mail: info@quantic.com.vn
Web site	www.quantic.com.vn
CEO	Bui Quoc Hung
Year of establishment	1991
Total number of employees	60
Number of programmers	50
Major Customers	Nortel Networks (Canada, USA) Omron (Japan) NTT-Data (Japan) ISB Corp. (Japan) Digital Research (Japan)
Skill Sets	Net Technologies

	<p>HTML, DHTML, XML / XSL, CHTML, WML</p> <p>J2EE, .NET, CORBA, COM/DCOM</p> <p>Web Services</p> <p>Servlets, RMI, EJB</p> <p>ASP, ASP .NET, JSP, PHP</p> <p>CGI, ISAPI</p> <p>Tools</p> <p>Visual Studio, CBuilder, JBuilder, Eclipse, Delphi, KyLix, Exceed</p> <p>Rational Tools</p> <p>ILOG Solver/Scheduler, JAM/Panther</p> <p>WinRunner, Test Director, FASTest Automation</p> <p>RDBMS</p> <p>Oracle</p> <p>MS SQL Server</p> <p>DB2, Sybase</p> <p>ObjectStore</p> <p>Ingress</p> <p>MySQL, PostgreSQL</p> <p>Interbase, MS Access, FoxPro</p> <p>Servers and Middleware</p> <p>Apache/Tomcat</p> <p>JBoss</p> <p>WebSphere</p>
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	WebLogic Prolifics Panther Protocols TCP/IP, HTTP/FTP SMTP, POP3, IMAP SSL/SSH SOAP, UDDI, WSDL WCDMA SS7, ISUP, SIP JPEG, MPEG Others OLE, ActiveX, OCX Crystal Reports LDAP & Active Directory TAPI, JTAPI I-mode / JPhone / EzWeb WOSA XFS Internationalization & localization
Operating Systems	.NET MS Windows Linux, FreeBSD AIX, Solaris, HP Unix, SCO Unix X-Window

Languages	<p>C, C++, C#</p> <p>Java</p> <p>Pascal, Delphi</p> <p>Visual Basic, VB .NET</p> <p>JavaScript, VBScript</p> <p>Perl, Unix shell</p> <p>SQL, PL/SQL, Pro*C</p>
Other expertise (if relevant)	<ul style="list-style-type: none"> • Enterprise Applications • Telecoms and Data Networking • Process Control • Management Information Systems • Testing automation
Quality management system (if relevant)	
Share of last year's offshore outsourcing revenue versus last year's total revenue"	100%
Share of offshore outsourcing from North American market	25%
Share of offshore	Nil

outsourcing from European market	
Share of offshore outsourcing from Japan market	75%
2003-2004 revenue growth rate	10%

7. NCS Corporation

Contact Address	28A4 Pham Hong Thai St., Ba Dinh Dist., Hanoi Tel: 84-4-7164181 Fax: 84-4-7164287 E-mail: info@newcenturysoft.com
Web site	http://www.newcenturysoft.com
CEO	Dao Xuan Anh
Year of establishment	2001
Total number of employees	84
Number of programmers	75
Major Customers	AC (Japan) CyberDyne (US) CyX (Japan)

	<p>IPL (Japan)</p> <p>Shinko Mex (Japan)</p> <p>Tenda (Japan)</p> <p>TRA (US)</p> <p>UP (Japan)</p> <p>XEO (US)</p>
Skill Sets	<p>Solutions & Architectures</p> <ul style="list-style-type: none"> - eLearning Solutions (LMS/LCMS/Software Simulation) - ERP Solution - Web-Based Applications - Client/Server Application - Embedded Applications <p>Java Technologies/ Open Source</p> <ul style="list-style-type: none"> - JSP/Servlet, Java Beans, EJB - JavaNetworking, RMI, CORBA - J2EE, Web Services - Linux, Open Source solution - PHP, ColdFusion <p>Microsoft Technologies</p> <ul style="list-style-type: none"> - ASP, ASP.NET, C#, COM, DCOM, ADO, RDO, ActiveX - VB, VB.NET, VC++, VC++.NET - Win32 API, MFC, ATL

	Embedded / Wireless <ul style="list-style-type: none"> - VxWorks / Symbian - WML/PocketPC - GPRS/iMode/CDMA/W-CDMA Test Automation <ul style="list-style-type: none"> - Rational Robot - WinRunner
Operating Systems	UNIX, Solaris, HP-UX, Linux, Microsoft Windows
Languages	Assembly, C, C#, C++, VC++, VC++.NET, VB, VB.NET, ASP, ASP.NET, Java, JavaScript, SQL, HTML, DHTML, XHTML, XML, XSL, PHP, and Perl
Other expertise (if relevant)	
Quality management system (if relevant)	
Share of last year's offshore outsourcing revenue versus last year's total revenue"?	70%
Share of offshore outsourcing from North American & European	10%

markets	
Share of offshore outsourcing from Japan market	60%
2003-2004 revenue growth rate	40%
Testimonials	

Testimonials of NCS:

From K. Kobayashi, Director of Tenda Co., Ltd (Tokyo, Japan)

NCSのアイデアと開発力は既に日本に100社を超える新しいマーケットを創出しました。私達はNCSのパートナーとして、誇りと安心感を持ってマーケットの拡大をし続けます。

"With the idea and the development power of NCS together we have created a new market which had already exceeded 100 customers in Japan. We are pride and confident to keep our market expansion with NCS as our partner."

From Hoang, Lan The, CEO of AC Co Ltd., Tokyo, Japan.

"AC Co Ltd is a Japanese business consulting company. We are not a full fledged IT company but software outsourcing is one of our business areas. We are serving as a

bridge between Japanese customers and NCS Corporation, our main outsourcing partner in Vietnam. The special about NCS is that they can fully communicate in Japanese with our customers and that gives NCS a A++ mark for the Japanese market.”

8. PSD

	Pyramid Software Development (PSD)
Contact Address	Quang Trung Software City, building 6. Hochiminh City Tel:8.715.5048; Fax:8.715.5049 Email:info@psdus.com
Web site	www.psdus.com
CEO	Nguyen Ngoc Thinh
Year of establishment	2001
Total number of employees	70
Number of programmers	50
Major Customers	JustDeals.com Renesas Novellus GIT Japan

	<p>Fogbreak</p> <p>Data Agent</p> <p>Highland Coffee</p>
Skill Sets	<p>Chapter 2: E-commerce</p> <p>Embedded/device driver</p> <p>Supply chain management/ERP</p> <p>Software testing</p>
Operating Systems	UNIX, Solaris, HP-UX, Linux, Microsoft Windows
Languages	C#, C, C++, Java, ASP
Other expertise (if relevant)	
Quality management system (if relevant)	
Share of last year's offshore outsourcing revenue versus last year's total revenue"?	98%

Share of offshore outsourcing from North American market	95%
Share of offshore outsourcing from European market	0
Share of offshore outsourcing from Japan market	15%
2003-2004 revenue growth rate	85%
Testimonials	

■ “PSD has successfully completed several projects for our organization that have contributed significantly to our bottom line performance ... This application is now the key tool in our procurement and sales pricing of all products.”

Vinh Nguyen-Phuc, CTO, JustDeals.com

■ “They are working on the firmware design and testing for processors in our disk drive duplication products and they have successfully assisted in the refinement of our data duplication engine software ... PSD has become our key partner in the development of the hardware, firmware, and software for all Greystone products. “

Mike Smithwick, Engineering Manager, Greystone Corp.

■ “ We have tried three other software companies in Vietnam and Singapore but none can complete the project until PSD took it over. Within 4 short months, our engineers can use their software to manage the four generators effectively“

Ben Khoon Yew, General Manager, VSIP Power

■ “I was so impressed by PSD’s responsiveness and talent that when I left Teleplan to start a new company to address the virtual distribution and reverse logistic management for service material, I contracted with PSD to develop our unique information technology needs. They have assigned a dedicated team and are defining the project requirements at this time. They have technically competent staff with well developed project management skills. They are making excellent progress and assisting us in bring our company and services to market. “

Ben Davidson, President/COO, Long Term Tech Group

9. Vietsoftware

Contact Address	8th Floor, 51 Le Dai Hanh, Hanoi, Vietnam Tel: 84-4-9745699 Fax: 84-4-9745700 E-mail: contact@vietsoftware.com
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	tran.luong.son@vietsoftware.com
Web site	www.vietsoftware.com
CEO	Tran Luong Son, Ph.D., MBA.
Year of establishment	2000
Total number of employees	120
Number of programmers	80
Major Customers	<p>IBM (USA)</p> <p>Toyota Vietnam</p> <p>MPDF (IFC)</p> <p>GTSGUARED (USA)</p>
Skill Sets	<p>Domain</p> <ul style="list-style-type: none"> - ERP - Finance and Banking - Portal - e-Commerce <p>Software Development Process</p> <ul style="list-style-type: none"> - RUP

	<ul style="list-style-type: none"> - Rational Rose, Rational XDE, Rational Suite <p>Platform</p> <ul style="list-style-type: none"> - JSP/Servlet, Java Beans - JavaNetworking, RMI, CORBA - J2EE, Web Services - Linux, Open Source solution <p>Web / Internet</p> <ul style="list-style-type: none"> - JSP / Servlet - ASP / .NET - PHP <p>Microsoft Technologies</p> <ul style="list-style-type: none"> - ASP, COM, DCOM - VB, VC++, .NET - Win32 API, MFC, ATL
Operating Systems	AIX, Solaris, HP-UX, Linux, Microsoft Windows
Languages	Assembly, C, C++, C#, Java, ASP, PHP, Delphi, Visual Basic and Perl

Other expertise (if relevant)	
Quality management system (if relevant)	
Share of last year's offshore outsourcing revenue versus last year's total revenue"?	50%
Share of offshore outsourcing from North American market	>90%
Share of offshore outsourcing from European market	Nil
Share of offshore outsourcing from Japan market	Nil
2003-2004 revenue growth rate	>100%

10. Sang Tao

	Sang Tao
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Contact Address	20F Lam Son St. F2, Tan Binh Dist., Ho Chi Minh City Tel. 84-8-848-5723 E-mail: doan@sangato.net
Web site	www.sangtao.net
CEO	Nguyen Doan Hung
Year of establishment	1998
Total number of employees	44
Number of programmers	35
Major Customers	NEC Soft, Ltd. (Japan) AXISSOFT Corporation (Japan) Sorimachi Inc. (Japan) Trinity Security System, Inc. (Japan) Communication Technology Inc. (Japan) Contour Japan (Japan)
Skill Sets	Java / Open Source - JSP/Servlet, Java Beans - J2ME, Web Services - Linux, Open Source solution Web / Internet - JSP / Servlet - ASP / .NET - PHP,

	Microsoft Technologies - ASP, COM, DCOM - VB, VC++, .NET - Win32 API, MFC, Embedded / Wireless - VxWorks / Symbian - WML/PocketPC
Operating Systems	UNIX, Solaris, Linux, Palm OS, Microsoft Windows
Languages	Assembly, C#, C, C++, Java, ASP, PHP, Visual Basic, Perl, XML, etc.
Other expertise (if relevant)	Mobile Phone Application Development
Quality management system (if relevant)	QA system developed in-house
Share of last year's offshore outsourcing revenue versus last year's total revenue"?	100%
Share of offshore outsourcing from North American market	5%
Share of offshore outsourcing from European market	5%

Share of offshore outsourcing from Japan market	90%
2003-2004 revenue growth rate	50%

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In order to conduct this research, I've received support from so many people. Firstly, I would like to show my sincere appreciation to entrepreneurs of 3 software ventures: Nguyen Thanh Nam (FSOFT), Ha The Minh (CMC Soft), Nguyen Son Tung (TVO) and their colleagues. Although very busy with their work and life, they help me to conduct many interviews. Without these support, I would not be able to complete this work now.

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I would like to thank all people around me, friends in Ume-Lab, Vietnamese, Japanese and all other international guys who help my time in JAIST so enjoyable.

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