# An Integrative Conceptual Model of Vietnam as an Emerging Destination for Offshore Outsourcing of Software Development for Finnish Companies

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## ABSTRACT

*Companies are constantly under pressure to develop software within tight budgets and more efficiently. Offshore outsourcing has been seen as one solution to the dilemma, and lucrative outsourcing businesses have evolved in many countries. Vietnam is now emerging within this global outsourcing sector. This study conducts an in-depth literature review and analyzes a number of important issues related to developing countries in general and Vietnam in particular, as an offshore outsourcing destination for Finnish companies for developing their software. From the analysis, an integrative conceptual model of software development through offshore outsourcing was developed. The study found challenges as well as potential in Vietnam's software outsourcing industry. In addition, it provides valuable information for practitioners interested in outsourcing to Vietnam and for further research within the area.*

## INTRODUCTION

Offshore software development has become a rapidly growing practice in the information technology (IT) industry. Rationale for outsourcing varies from financial aspects, renewing management agenda and focusing on core competencies, to technical and political reasons (Lacity & Willcocks, 2001; Sparrow, 2003; Yalaho & Nahar, 2009; Nahar, 2010). The financial aspects are reducing costs, generating cash, and replacing capital outlays with periodic payments. Technical motives are improving quality, gaining access to new talent and technology, and availability of service providers with expertise and economies of scale. Political reasons deal with dissatisfaction with internal departments and managers, viewing IT as a support function rather than a key asset, and pressure from service providers, as well as a desire to follow trends receiving attention in trade journals and press (Smith et al., 1998). Development of online databases, collaborative online and other tools, different sourcing strategies and cooperation models develop many opportunities for companies to effectively and precisely executing outsourcing projects. Hoch et al. (2000) addressed that even though there is high potential for attaining wealth and profits in the software business, only a few companies have succeeded to remain in the market and flourish.

Today offshore outsourcing is more a norm rather than a specialty. Nevertheless, implementing a successful offshore outsourcing project is not an easy task. In addition to the traditional risks software projects face, such as organizational, technical and communication, offshore



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outsourcing projects require more attention on managerial and cultural aspects (Beulen & Ribbers, 2002; Narayanaswamy & Henry, 2005; Wei & Peach, 2006; Yalaho & Nahar, 2008). Vast distances between software development centres, cultural aspects and barriers emphasize the need for offshore outsourcing projects to be well managed. Time zone differences also magnify the requirement for managing offshore outsourcing projects successfully.

Carmel (2003a) developed a 4-tier taxonomy of software exporting nations classifying the software industry. In this categorization, Vietnam resided in the last tier of "Infant stage software exporting nations". The characteristics of this tier are under five years of maturity, under 100 organizations and companies, and export revenues between US$25 million and US$100 million. Along with Vietnam, fourth tier nations include Cuba, Egypt, Indonesia and Bangladesh. These nations face challenges related to infrastructure, cultural and socio-political issues, and partner preconceptions (Heeks, 1999; Coward, 2003). The top tier consists of organization for economic cooperation and development (OECD) countries, such as the United States (US), Germany, Ireland, Israel, Finland and the new comer of the 1990s, India. These countries have a software export maturity of over 15 years, hundreds of organizations and significantly over US$1 billion of export revenues (Carmel, 2003a). Indian IT-BPO industry attained aggregate returns of US$71.6 billion in 2009. Of this, the software and services segment accounted for US$59.6 billion. As per NASSCOM, "the Indian IT exports are anticipated to attain US$175 billion by 2020 out of which the domestic sector will account for US$50 billion in earnings". India continues to be the most favoured destination for companies looking to offshore their IT and back-office functions (India Business Dictionary, 2010). Currently, Vietnam Software Association (VINASA) has 198 members and it intends to increase its membership base to 500 companies by 2015 (Ministry of Foreign Affairs of Denmark, 2010a). FPT Software and TMA Solutions, two of the member companies of VINASA have had outsourcing experience since 1999 (FPT Software, 2006). The revenue of "FPT Software" in the first quarter of 2010 was approximately US$12 million (FPT Software, 2010). Vietnam is making an impressive progress in offshore outsourcing and has the potential of becoming a significant player in the global software market in the future.

Nearly 90 million inhabitants (Excel Brothers Inc., 2010) make Vietnam the 13$^{th}$ most populous country in the world (Wikipedia, 2009). The advantage of big population is the prospect of a large skill pool. In fact, today Vietnam outputs 15,000 information and communication technology (ICT) masters and engineers from local universities and another 10,000 ICT college graduates annually (Ministry of Foreign Affairs of Denmark, 2010b).

The success of India's IT industry, especially software and services sectors have fuelled other Asian countries to develop their assets as they seek to improve economic growth and general quality of life. India is the most dominant country in Asia. Its success has been built on strong government involvement, large skill pools, proficiency in the English language, and a focus on quality improvement, assurance, quality and process certificates. Therefore, these incentives have helped it to become a dominant player in the IT business (Cusumano, 2006; Eischen, 2003; NASSCOM, 2008). The success of India has inspired other Asian countries to develop their software and IT industries and Vietnam is no exception.



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The government's strong support, such as tax incentives, infrastructure development, low labour costs and potential skill pools (Dzung, 2008; Gallaugher & Stoller, 2004; Nguyen, 2004) could, for example, enhance Vietnam's competitive advantage as they did for India a decade before. These programs and the low cost environment have attracted many major foreign multinational companies to invest in Vietnam. Even the major Indian IT companies, whose success and growth have come from providing outsourcing services, have decided to expand and create joint ventures and offices in Vietnam (Vietnam Software Association, 2006).

Finland, in contrast, is one of the leading countries in the technological world. It is technologically a highly developed country and is regarded as a location for increasing technological knowledge and expertise. The software industry is one of Finland's most important industry sectors. Despite investing larger share of GDP into developing the software industry, the internationally successful Finnish software companies are still few in number. The size of the industry was about 3.06 billion Euros at the end of 2009, while it was 3.09 billion Euros in 2008. There are currently more than 1000 software companies in Finland. In 2009, there were only seven Finnish software companies among the top 100 European software vendors. Revenues are relatively low when compared to top countries. Most companies are small or medium sized, i.e. one third employs fewer than five professionals. There are about 33,000-48,000 people working in software development in Finland, however of which most likely more than half are working outside the software industry (Ronkko et al., 2010). Finnish software companies' financial structure is rather conservative with little debt or outside funding (Lassila et al., 2006). Although it is reliable, the lack of venture capital can hinder swift growth and internationalization.

As a software development outsourcing destination, Vietnam has not been widely researched by the academic community. This research was conducted to find out the possibilities that can be offered to Finnish companies by Vietnam and Vietnamese software outsourcing service providers. Limited research exists on the subject of Vietnamese software outsourcing and almost no research has been done from the Finnish software companies' perspective. Hence, there is a research gap that requires further investigation. The main research question of this study is: *How can Vietnamese outsourcing service providers serve Finnish software outsourcers?* This study conducts an in-depth literature review and analyzes a number of important issues related to this research problem (see the literature review section). Through an extensive literature review we also find out the current state of Vietnamese software companies, earlier experiences of Finnish companies' engagements with offshore outsourcing, and practical and special issues involved with Vietnam and Vietnamese service providing companies. From the analysis, an integrative conceptual model of software development through offshore outsourcing is developed.

The remainder of the paper proceeds as follows: a research method and literature review on Vietnam as an offshore outsourcing destination for Finnish companies for developing their software products are conducted first. Based on the literature review an integrative conceptual model of offshore outsourcing of software development to developing countries (i.e. Vietnam) is developed. Finally, conclusions and implications are discussed, and future research direction is suggested.



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## RESEARCH METHOD

In this study, the conceptual model has been developed by following a systematic process that includes: a) objectives and key constructs of this study, b) relationships among the key constructs, and c) literature in the field of offshore outsourcing of software development.

This study evaluated a representative sample of research published in journals, books, conference proceedings, etc. dealing with a) offshore outsourcing, b) offshore software development, c) IT industry in developing countries, especially in Vietnam, d) approaches for IT outsourcing to developing countries and to Vietnam, and e) Finnish outsourcing service users.

Several methods of locating published materials were used. We searched the databases, such as EBSCO, EEBO, Linda, Nelli, ScienceDirect, Emerald, ACM, and JSTOR using a combination of the following keywords: offshore outsourcing, offshore software development outsourcing, offshore software development outsourcing process, IT industry in Vietnam and China, factors affecting IT industry success in developing countries, advantages of developing countries' IT outsourcing service providers/vendors, challenges of developing countries' IT outsourcing service providers/vendors, Vietnamese IT service providers/vendors, advantages of Vietnamese software outsourcing service providers/vendors, challenges of Vietnamese software outsourcing service providers/vendors, Finnish IT outsourcing service users/outsourcing companies, Finnish companies' IT outsourcing engagement with Vietnamese software service providers, types of IT outsourcing to developing countries, business models and pricing models for IT outsourcing to Vietnam, Vietnam as an offshore outsourcing destination, to name a few. In addition, we reviewed some books and proceedings that were not included in the databases mentioned above. Through the abovementioned processes the relevant materials were collected.

Abstracts and conclusions were reviewed quickly; those unrelated to the research problem and objectives were rejected. We learnt that a great deal of research has been done on offshore outsourcing in general, but very limited research has been done on the subject of software development outsourcing to Vietnam and almost no research has been done from the Finnish software companies' perspective. After a preliminary reading, some additional papers that seemed not to be related to our research, were omitted. The rest of the papers were thoroughly read and we identified related information regarding our research problem, research objectives, and thoughts/ideas for this study. As part of the analysis, these papers were used as references in developing the conceptual model for offshore outsourcing of software development to developing countries (i.e. Vietnam).

## LITERATURE REVIEW

### *Software development through offshore outsourcing*

The offshore outsourcing process can be divided into nine phases, adapted from the models of Momme (2002), Momme and Hvolby (2002), Nahar et al. (2002), and Yalaho and Nahar (2009).



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**Table 1: The offshore outsourcing process.**

| The phases of offshore outsourcing process | The key tasks involved in the different phases |
|---|---|
| 1. Strategic analysis and decision | Strategic analysis is conducted to evaluate company's outsourcing needs and decide an appropriate outsourcing strategy. |
| 2. International market research for software production through offshore outsourcing | Examination of the factors of prospective software producing nations as described below. |
| 3. International promotion of software production through offshore outsourcing | Create awareness of the company and its outsourcing needs to prospective service providers in identified foreign markets and delivery of information. |
| 4. Selection of a suitable outsourcing service provider | Examine level of knowledge, skill and experience of software and management professionals, financial resource, quality certificates, size, and earlier performances in offshore outsourcing. |
| 5. Negotiation and contract | Software product and/or service requirements, delivery time, payment mechanisms, etc. are negotiated and contracts signed. |
| 6. Implementation of the outsourcing project | Occasionally delivering software development tools, providing training, implementing the outsourcing project, providing technical support, reporting, reviewing of milestones, testing and performing quality assurance procedures. |
| 7. Handling of financial issues | International payments are made for the outsourcing services. |
| 8. Delivery of software products/sub-products and documents | Delivery of ready software products and related documents. |
| 9. Termination of outsourcing relation or continuation | Either the outsourcing relation is terminated after the completion of the outsourcing project, or is continued with a new project for software development outsourcing. |

For details of different IT-tools and methods that can be used during the execution of offshore outsourcing process, see Nahar et al. (2002) and Yalaho and Nahar (2008, 2009).

To evaluate the service providers, Nahar et al. (2002) present the factors of the prospective software producing nations. The factors are:

- Availability of well-educated, trained, experienced and English speaking software programmers and engineers, quality assurance engineers and software project managers.
- Low costs and wages level of software professionals and other production costs.
- Availability of functioning infrastructure, such as telecommunication lines, internet connections, electricity, etc.
- Existence of intellectual protection law, functioning general legal framework and enforcement mechanisms.
- Favourable government policy and support for software industry, for example, tax incentives and so on.
- Political, social and economic stability.
- Geographic location and cultural affinity.



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In addition, outsourcing service users must evaluate the service providers' experience in outsourcing, conditions of existing facilities, software development processes, methods and quality control procedures, business/operational models, employee turnover and a list of satisfactory references (Nahar et al., 2002; Yalaho & Nahar, 2009).

### *Vietnam as an offshore outsourcing destination*

***Vietnam's IT Industry*** has experienced a vast development recently. "Software sales revenue saw a four-fold increase from US$250 million in 2005 to $680 million in 2008 and $850 million in 2009". Revenue was expected to exceed $1billion by the year-end (Vietnam Business and Economy News, 2010). Vietnam's IT market is expected to grow at a compound annual growth rate (CAGR) of 12% over the 2010-2014 period. The domestic market for IT products and services is projected to reach US$1.9 billion in 2010 and US$2.9 billion by 2014 (Business Monitor International, 2010a). Vietnam's software market is developing swiftly and is offering a good investment potential for foreign companies.

VINASA is the leading non-governmental organization of Vietnamese software companies and is an equivalent of India's NASSCOM. It has 198 member companies, contributing 70% of the IT industry's total revenue and employing 60% of the industry's total employees. Over the past several years, it has helped its member companies improve their presence in the local market by connecting with international IT businesses, expanding export outlets, establishing trademarks, and developing human resources (Vietnam Business and Economy News, 2010). In addition, an impressive list of foreign companies have entered Vietnam, such as Microsoft, IBM, Intel, Cisco Systems, Accenture, Apple, Oracle, Hewlett-Packard, Alcatel-Lucent, Acer, Sony, Hitachi, Sanyo, Bayer, BMG, more than 20 Danish companies, and so on.

According to Business Monitor International (2010a), there are around 10,000 firms currently licensed to provide IT services, but only one-third are actually operating in Vietnam. Another study shows that there are approximately 4,000 ICT companies and around 460,000 employees working in the ICT sector in Vietnam. Most of the software companies are small (over 80% of these employs under 50 professionals) and there are about 20 companies with more than 100-500 employees. There are also some companies with more than 1,000 employees, such as FPT software, FPT Information Systems, TMA Solutions, PSV, etc. Of the 460,000 employed in the ICT sector, 90,000 are in the software and digital content sector (Ministry of Foreign Affairs of Denmark, 2010b). However, over the last few years, the Vietnamese software and IT services companies are enjoying significant development in size, quality and quantity.

The number of fixed telephone and mobile subscribers was over 30 million in 2006 (Ministry of Posts & Telematics, 2006) and 115.7 million in 2009 (Smith, 2010). In addition, the number of internet users has grown from 12 million in 2006 (HoChiMinh Computer Association, 2006) to 24.7 million in 2009 (Smith, 2010). Strong domestic demand has built a solid foundation for domestic industries to develop and evolve.

The government has also become aware of the impact IT can make to economic development and has considered IT as a driving force for economic and social progress. To promote and enhance IT industry and especially the software industry, the state has issued several policies that aim to (Nguyen, 2004; Jenkins, 2004): a) set up a favourable investment environment, b) expand



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the market, c) develop human resources, d) protect copyrights, and e) create favourable telecommunication infrastructures. For Vietnamese software companies, these policies are concretized by (Athukorala, 2006; Auffret, 2003; Nguyen, 2004): a) a four year exemption from income tax from the first year a company has a taxable income, b) preferential income taxation for software industry staff, c) 0% Value Added Tax for software products and services, d) 0% import tax for materials directly used for software production, e) 0% export tax for software products, f) subsidized internet connection fees for companies operating in software parks, and g) exemption for all local and foreign software companies, or have diminished land tax and costs of using and renting land.

However, "Vietnamese ICT policies are too broad and too many. The Vietnamese Government allowed 22 agencies to regulate different facets of ICT, thus confounding the users and impeding progress" (Information and Communication Technology in Vietnam, 2003). The domestic ICT market growth is severely hindered by poor intellectual property protection. Business Software Alliance (2006) stated that piracy rate in Vietnam was the highest (90%) in the world in 2005 and an estimated US$38 million was lost due to pirated software. In 2009, software piracy rate was over 85% in Vietnam (Excel Brothers Inc., 2010).

In respect of the above mentioned current statistical data, it can be seen that Vietnam is already in Tier 3 of Carmel's (2003a) software exporting nations' taxonomy. Carmel defined the thresholds for Tier 3 as: emerging software exporting nations; over five years of maturity; critical mass of organizations in tens; and export revenues over US$25 million. As mentioned earlier, companies such as FPT Software and TMA Solutions have outsourcing experience since 1999. Besides, there are many other outsourcing service providers who are serving international clients and new ones are rising constantly.

An ambitious IT plan for 2010-2020 undertaken by Vietnamese government may shape many segments of the Vietnamese IT market. It is evident that Vietnam's gradual integration into global trade networks (ASEAN, WTO) is increasing the opportunities for foreign investors and importers. Vietnam's IT industry may make strong progress due to growing PC penetration, improvement of IT infrastructure, economic growth, gradual implementation of a range of government IT initiatives and ambitious plans.

## ADVANTAGES AND CHALLENGES OF DEVELOPING COUNTRIES' IT OUTSOURCING SERVICE PROVIDERS FOR WESTERN OUTSOURCERS

### *Cost reductions and abundance of workforce*

Today, offshore outsourcing to developing countries is becoming a common practice. The most dominant rationale for offshore outsourcing has been cutting costs. In fact, Carmel and Agarwal (2002) found out that costs were the most significant driver in their four-stage "Sourcing of IT Work Offshore Maturity" model. Erber and Sayed-Ahmed (2005) suggest that total expected cost savings as high as 40% simply can not be ignored. Cost savings can be gained by cutting labour costs, IT development time, maintenance costs and the timeframe of production processes overall. Software production is a knowledge intensive and complex task where most of the work is done by human intelligence. It is estimated that 70% of a software project's costs are generated by staff expenditures (Li & Gao, 2003). Therefore, the most effective way to cut costs



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is to reduce personnel costs. Developing countries often offer significantly lower wage levels than developed countries.

Although fixed costs - such as hardware, office and tools expenditures - are not utterly significant in software production, companies can avoid investments by buying outsourcing services, or transferring work to a cheaper country (Karolak, 1998). In this case, the investment responsibilities are shifted to the service providers. In addition, on top of low prices, developing countries' governments offer promoting incentives for the software industry, especially for companies with exporting activities. These subsidies vary from favourable policy making and human resource development programs to infrastructure subsidies, and tax and import relief (Nguyen, 2004; Tan & Leewongcharoen, 2005).

The costs are not the only advantage of developing countries and are becoming a less prominent factor. The software industry has been suffering from a skilled workforce shortage. Developing countries, such as India, China and the Southeast Asian countries, have big populations and favourable demographic profiles, i.e. huge portions of the population are aged 15 to 59. In addition, developing countries can annually produce a large amount of IT graduates to fulfil the skills demand. India has successfully developed its education system. However, not every country excels in human resource development like India. For example, Indonesia produced only 5,000 software graduates in 2003 and Thailand roughly employs 40,000 professionals (Bruell, 2003; Software Park Thailand, 2007). China is also focusing to improve its human resources to compete with India. In 2004, it produced 56,000 Master and Doctoral graduates in engineering, 8,000 in economics, 17,000 in management, and 17,000 in science. This does not include colleges and other private education institutions (National Bureau of Statistica China, 2007). Thus, outsourcing to developing countries can ease the pervasive demand shortage of software professionals. These talents give access to innovative technologies, improve product quality and foster innovation creation. For example, many companies are specialized in niche products or services and thus, have developed a special skill set.

### *The differences in offshore outsourcing between developing countries (e.g. Mainland China vs. Vietnam)*

A lot of issues have been discussed relating to the similarities, differences, opportunities, strategies and threats between China's and India's IT outsourcing industries. Today, India and China have become the most popular destinations in global outsourcing as both countries offer skilled human resources, cost advantages, quality services, quantity and capabilities of service providers, to name a few. However, so far such kind of discussion between China's and Vietnam's IT outsourcing industries has got very limited academic attention. Thus, the focal point of this section is to explore these two particular countries' IT outsourcing industries from different dimensions to reveal the important characteristics and features of each individual industry.

***IT Outsourcing Industry.*** *China's IT outsourcing industry* is increasingly becoming more mature and rational. Around 85% of China's IT outsourcing industry is based on the domestic market, while only 15% on the international market (Wang, 2010). In 2009, the total international service outsourcing contracts value was US$20.01 billion (Devott, 2009). The total value of the Chinese software market is forecasted to reach US$11.1 billion in 2010. IT services segment is

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projected to achieve a CAGR of 15% between 2010 and 2014 (Business Monitor International, 2010b). Jain (2010) addressed in a recent report that "China still takes up a small portion of the global total". Despite rapid development, the Chinese outsourcing industry only accounted for 4% of the global total in 2009.

***Vietnam's IT outsourcing industry,*** both in terms of domestic and international markets is also growing, but it is considerably small compared to China and other top outsourcing nations. According to Vietnam Business and Economy News (2010), software sales revenue was increased from US$680 million in 2008 to US$850 million in 2009. Business Monitor International (2010a) highlighted that the Vietnamese IT market is anticipated to grow at a CAGR of 12% over the period of 2010-2014. The domestic market for IT products and services is projected to reach US$2.9 billion by 2014.

***Government Policies and Support.*** *The Chinese government* has issued a number of favorable policies which may assist the development of China's IT outsourcing industry. Wang (2010) stated that with the support of "10-100-1000 project" implemented by the Ministry of Commerce, China has chosen 20 cities as model cities of outsourcing which include not only first-tier cities, but also second and third-tier cities. Consequently, outsourcing businesses are spreading across China at a high speed. Chinese Authorities have been offering strong support to local companies by providing incentive packages and relieving business tax on offshore contracts until 2014 (D'Altorio, 2010). Expanding to the European and American markets remains the major strategy of the Chinese government and companies. The Chinese government has started awarding China's leading and growing service providers. This example has been a true inspiration for other companies as well.

The main objective of "ICT 2020 vision" set up by *the Vietnamese government* is to develop a technology-savvy workforce for both domestic and global markets and transform Vietnam into a powerful ICT country by 2020 (Vietnam Business News, 2010c). To fulfil this vision, the government has started implementing a series of policies, such as developing a number of new software bases along with several new software businesses in Vietnam, developing partnerships with some of the world's most dominant companies such as Microsoft, IBM, Intel, etc.

Microsoft in partnership with the Vietnamese Ministry of Education and Training (MoET) has developed education programs. These programs include "teacher and student education and IT access programs, partners network readiness programs, local IT software start-up programs, an innovation centre to train and certify local IT professionals", etc. (Vietnam Business News, 2010c). All the above-mentioned initiatives are likely to have an impact on the Vietnam's IT industry competitive landscape.

In addition, a number of associations (China Software Industry Association (CSIA) of China, VINASA of Vietnam, etc.) along with the governments of both countries are persistently supporting the promotion and development of IT outsourcing industries. Chinese government's support towards "software and services outsourcing industry" in particular is huge and large compared to Vietnamese government support.

***Education and Training Systems.*** In the 5 years plan (2006-2010), a key issue was listed by the Chinese government; that is how to "Construct the IT Talents Highland" (Ju, 2008). Keeping it



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in mind, the Chinese government is investing heavily in a) improving tertiary education, b) developing a number of IT schools and colleges, and c) establishing English language training centers, etc. Education budget was about US$8.11 billion in 2008; this figure being a 45% increase over that of the year of 2007 (ChinaToday.com, 2010). However, the education and training of software engineering is still weak in China. Most of software education and training in China does not match the real demands of business.

The education system's shortcomings have created significant challenges for foreign companies seeking to recruit and retain potential Vietnamese employees (Vietnam Business News, 2010a). To overcome these shortcomings various strategies are gradually getting implemented in Vietnam. For example, Microsoft is currently contributing to human capital development through capacity building programs in Vietnam. In addition to this, to obtain an innovative mixed education program based on international education models, a number of Vietnamese Universities are having educational collaboration in advanced IT training for Master and PhD students, with well-known universities all over the world, such as Portland State University in Portland, Oregon, etc. (Excel Brothers Inc., 2010).

Many foreign companies and universities have established a number of training centres, colleges and universities with Chinese and Vietnamese universities, training centres, software companies and software parks. This is another way to accelerate the growth of the "software and services industries" in both countries.

***IT Workforce.*** China is graduating around 350,000 engineers and technologists every year. The central government of China aims to increase software professionals to around 600,000 graduates per year (Cochrane, 2006).

The Vietnamese Ministry of Information and Telecommunication aspires to produce 528,000 IT professionals by 2020. Vietnam also aspires to develop 25,000 software testing engineers and quickly become an attractive center for investors in the software testing sector (Vietnam Business and Economy News, 2010).

In addition, an increasing number of overseas Chinese and Vietnamese graduates are returning to homes to make contribution to their respective software industry. China has more software professionals and they have more diversified technical skills than Vietnam. Vietnam's advantage will lie in having a younger population as compared to China's fast-aging population.

However, there is a real shortage of business analyst, high-level system architects, designers, product managers, and project managers in both countries. Employee turnover in China and India can be over 10% or even higher whereas in Vietnam it is less than 5% (Fire Code JSC, 2008). Most Chinese companies do little to develop and keep their employees.

***Infrastructure.*** IT infrastructure in major Chinese provinces is highly developed but the poor telecom infrastructure is especially evident in the poorer rural areas of the country. All kinds of infrastructures are much more developed in China. Vietnam has an urgent need to upgrade its national infrastructure (roads, electricity, telecommunications, Internet bandwidth and access).



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New software parks and companies are rapidly increasing in many cities in China. Currently there are 10 software parks operating in Vietnam. These software parks cannot meet the Government's target annual growth rate of 35-40%. In addition, Vietnamese authorities and agencies have been building and operating many new software parks, which often house not only Vietnamese software companies and joint ventures, but also 100% foreign-owned companies (Excel Brothers Inc., 2010). Nonetheless, China has much more software parks than Vietnam.

***Legal Systems.*** Software piracy in China is over 95% and in Vietnam over 85%, compared with 76% in neighbouring Thailand (Excel Brothers Inc., 2010). Despite the high risk to intellectual property (IP) theft, many large high-tech companies are outsourcing their work to China and Vietnam. Vietnam is steadily improving IP rights protection. More bureaucratic barrier exists in Vietnam than in China.

***Language and Culture.*** China has language advantages in terms of Japanese. Vietnamese employees are more proficient in English than Chinese employees. This is because unlike Chinese language, Vietnamese language uses the Latin alphabet and English is a highly popular language in Vietnam.

There are also cultural similarities between Chinese, Japanese and South Koreans. Vietnam has long been exposed to French, North American, Japanese and Chinese cultures that make it easier for them to execute multicultural outsourcing projects in Vietnam than China. However, both Vietnam and China face cultural differences with Western clients, expenses to travel to offshore clients/markets, managerial overheads, time-zone differences, etc.

***Economical and Political Situation.*** Vietnam's economy is not as developed as China's economy but it is growing. "China is already the third largest economy in the world and it accounts for 7.5% of the world's total economic activity" (Money Morning, 2010). China has absorbed foreign direct investment (FDI) many times more than that by Vietnam. A significant portion of the FDI goes to "software and services outsourcing industry" in both countries.

Although high political stability and security remain in both countries, Vietnam is much more stable politically and socially than China.

***IT Services Providing Companies.*** There are more than 13,000 IT services companies in China (ChinaKnowledge, 2010). Totally new 4175 service outsourcing companies emerged in 2009 (Devott, 200). Among the top 1000 Chinese companies, 95% have developed offshore outsourcing strategies (Wang, 2010).

There are approximately 4,000 ICT companies and around 460,000 employees working in the ICT sector in Vietnam. A majority of these companies are small. Of the 460,000 employed 130,000 in the IT application sector and 90,000 in the software and digital content sector (Ministry of Foreign Affairs of Denmark, 2010b).

Vietnam is lagging behind China in process capability, software quality certifications, and project management skills. Until now a very few Vietnamese companies have CMM level 5. However, Vietnamese IT companies are persistently putting high efforts to earn international



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certifications, such as the ISO-9000, CMM of all 5 levels, telecom standard and security standard certifications.

Vietnam is a more competitive country than China in terms of quality-price ratio. Vietnam is rapidly developing as an IT outsourcing destination.

***Salary.*** Software engineers in China can earn annually $7,200**,** while in Beijing they can earn $9,360. A software engineer can earn an annual salary of $7,056 in Dalian, or salary of $5,760 in Jinan. Shanghai, Beijing and Shenzhen lead with an average annual salary of $6,687, $6,481 and $5,872 respectively (Seeking Alpha, 2009).

Mainland China is a market with numerous IT production activities with high growth rates, resulting in a rapid wage increase of 25-40% a year. Salary levels in the country are also three times higher than those in Vietnam. Thus a huge number of big IT companies are looking for new and more suitable business environments, such as Vietnam (Vietnam Business News, 2010b). If labor costs increase with such a speed, then China may start sending the jobs to the next lower-cost country such as, Vietnam.

***Marketing Capability.*** China follows a complicated, personal network-driven business approach (D'Altorio, 2010). The market orientation of Chinese is not significantly different from their Vietnamese counterparts. There is a big gap of capacity development between Chinese and Vietnamese companies. To put it simply, both countries have been encountering problems such as, insufficient communication skills, poor international business cultural background, limited overseas markets/clients, lack of cooperative strategies with others, to name a few.

To conclude, many companies are interested in using any of these two countries as an outsourcing destination. However, it can always be a challenge to decide which country best fits their offshore outsourcing objectives and which service providers in the preferred country best fits the requirements of their projects. Yet, there exist many risks in both China's and Vietnam's IT outsourcing industries and all these risks need to be alleviated.

## ADVANTAGES AND CHALLENGES OF VIETNAMESE SOFTWARE OUTSOURCING SERVICE PROVIDERS FOR FINNISH OUTSOURCERS

### *Dynamic, flexible and cost effective software and services development*

Executing offshore outsourcing projects successfully, can be a major value driver for Finnish software companies. It can be a major factor determining company success or failure. Using offshore outsourcing, companies can optimize production costs as well as enabling them to shift resources towards the most valuable projects and products.

The Vietnamese offshore outsourcing industry is in its infancy and the size of the outsourcing service providers are small, but they are often dynamic and flexible (Gallaugher & Stoller, 2004; Vietnam Outsourcing Portal, 2010a). The Vietnamese IT market is steadily growing and domestic consumption is adding to its significance. Software parks are being built with modern infrastructure.



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Vietnam now has a strong pool of IT employees and is producing 15,000 university graduates and 10,000 college graduates annually (Vietnam Outsourcing Portal, 2010b). They are young, creative, hardworking, pro-Western, and possess a good educational background. Vietnamese primary education emphasizes science, math and logic that provide a solid foundation for successful IT work. In the case of English proficiency, Vietnam pales compared to India, but usage of roman alphabets and historical heritage generates a better awareness of French and English than surrounding East Asian countries (Gallaugher & Stoller, 2004; Vietnam Outsourcing Portal, 2010b).

The Vietnamese culture emphasizes collectivism and loyalty, and thus, attrition rates are currently low (less than 5%) (Gallaugher & Stoller, 2004; Fire Code JSC, 2008). Low rates result from increased familiarity and trust within outsourcing service users and service providers, as well as ensuring continuity and control. In addition, it will decrease the overhead costs. From a political and societal point of view, Vietnam is a very stable and secure country. This has been also recognized by the West and Vietnam has been accepted into various trade agreements (WTO, AFTA, ASEAN, Bilateral Trade Agreement with US, trade agreement with the EU) and organizations (Gallaugher & Stoller, 2004; Excel Brothers inc., 2010). The Vietnamese government has recognized the significance of the software industry for the country's economical and societal advancement by granting many incentives and subsidies, such as free export and value-added tax for software products, subsidizing infrastructure improvements, improving education and training systems, etc.

Today, the number of Vietnamese citizens living in Finland is around 1,600 (Statistics Finland, 2007). The offshore Vietnamese diaspora, *Viet Kieu*, can operate across cultures and languages, moreover, be the key to cushion the ill-effects of culture. In addition, the *Viet Kieu* can be a source of capital and know-how. To enhance their remigration, government offers a range of incentives from tax breaks to direct ownership of homes and businesses (Gallaugher & Stoller, 2004).

On top of the aforementioned factors, Vietnam holds one major and often a key decision-making factor - relatively low costs, even compared to China. In Vietnam, currently the monthly salary can be estimated to range between US$250-300 for newcomers, US$400-500 for the more experienced and US$550-900 for the highly educated and experienced people (Ministry of Foreign Affairs of Denmark, 2010b). Salary levels in Vietnam are three times cheaper than China (Vietnam Business News, 2010b). Even some studies say, in Vietnam labor costs are 90% less than in the USA (Fire Code JSC, 2008). This cost advantage has been noticed by foreign multinational companies and even Indian outsourcing service providers have opened offices in Vietnam. Furthermore, the approximately 40% -50% lower wages are a significant advantage over the market leader, India.

### *Limited resources, technical expertise and experience*

The coin always has two sides. Software companies in Vietnam are in most cases small, possess limited resources and lack state-of-the-art knowledge and experience in business administration (Gallaugher & Stoller, 2004). According to Chidamber (2003), they are less trained than Carmel's (2003a) other Tier 3 or Tier 4 nations. They lack information about markets and customers, and marketing activities are underdeveloped. Thus, software companies face barriers

to entering international markets. VINASA, established in 2002, is the leading non-governmental organization and one of their main goals is to overcome this challenge (Vietnam Software Association, 2006). The role of VINASA is crucial as it is the main voice of software companies in governmental committees and on the international stage. However, VINASA is also young in operation and is still being developed.

Vietnamese research and development (R&D) capacity is limited and not invested appropriately. This is due to limited resources, unconvertible currency – *dong* – along with an underdeveloped banking and funding sector. Most of the bank loans are still going to state-owned companies where profit margins are slim or none (Gallaugher & Stoller, 2004). The credibility of Vietnamese outsourcing service providers is also quite slim, as only a few have international experience and international quality certificates. Currently, more than 20 Vietnamese software companies have obtained international quality management certificates, such as CMMI-5, CMM-4 or 3 and more than 40 companies have been certified with ISO 9001-3, TL 9000 and ISO 27001 (Ministry of Foreign Affairs of Denmark, 2010b; Business-in-Asia.com, 2010). By 2020, Vietnam will need 528,000 employees in IT fields, including 148,000 professionals in the software sector. Due to shortcomings in education system and limited training capability, Vietnam may not satisfy international demands (Vietnam Business & Economy News, 2010).

Vietnamese IT firms' employees are often new graduates with limited practical experiences, teamwork capacity and management skills. In addition, the education system is rather chaotic as the tertiary education system is not cohesive and the assortment of certificates creates confusion (HoChiMinh Computer Association, 2006; Vietnam Business News, 2010a).

Despite stability, the Vietnamese administration has a reputation of being slow moving, extremely corrupt and capricious when dealing with foreign companies (Gallaugher & Stoller, 2004). The Vietnam Corruption Perception Index rank was 116th of 178 countries (Transparency International, 2010) and even ministers were caught in corruption scandals (Transparency International, 2005). In addition, weak IP rights protection and enforcement, as well as a weak legal system and policy enforcement create an unfavourable situation for the IT offshore outsourcing industry. Although its piracy rate has been gradually going down, Vietnam is still among the top-20 countries violating the IP rights protection (Dzung, 2008; Excel Brothers Inc., 2010). These problems are currently being addressed by the government, such as adding transparency, comprehensive and concrete policies, but the speed of change is rather sluggish.

Like many other developing countries, Vietnam's general infrastructure level is low, even though it is developing fast. The situation is adequate in software parks and big cities, but commonly in poor condition elsewhere. Although, the Vietnamese government has invested heavily in communications technology, almost doubling the capacity of wired telephone connections, the telecommunication and internet connection are often expensive and unstable (HoChiHinh Software Association, 2006; Dzung, 2008). In addition, the flow of information on the internet is strictly controlled by the government, as it was banned before 1997. For example, the capacity of the global internet gateways of Vietnam, controlled by both state-owned VNPT and FPT Telecom (HoChiMinh Software Association, 2006). In comparison, the capacity of the Finnish IT Center for Science's corresponding connections is 10,000 Mbps and this is solely used by the academic world consisting of 80 research organizations and 350,000 users (Finnish IT Center for Science, 2006). However, the recent development shows that the international internet



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connection capacity has reached 64.6 GBPS in the beginning of 2010 in Vietnam. The amount of internet users doubled from 2006 to 2009. Today, more than 25% of Vietnamese are online and Vietnam has more than 120 million mobile phone subscribers. Subscription and monthly internet fees have gone down as well (Ministry of Foreign Affairs of Denmark, 2010b).

## APPROACHES OF WESTERN COMPANIES TO USE DEVELOPING COUNTRIES AS IT OUTSOURCING DESTINATIONS

### *Types of offshore outsourcing*

Outsourcing can be divided into the following taxonomy (Lacity & Hirchheim, 1993, 1995; Nahar et al., 2002; Lane et al., 2005; Siemens IT Solutions and Services, 2007): body shopping, staff augmentation, project management, selective sourcing and total outsourcing. *Body shopping* is usually chosen when an organization wants to fulfil short term demands. Commonly, it is implemented by the use of contract programmers/personnel, usually within organization's facilities, i.e. onsite, that is managed by company management. *Staff augmentation* is an arrangement wherein the service provider agrees to offer specific skilled human resource to supplement personnel from the client's side. In this mode of operation, the service provider does not take on any accountability or risk. *Project management* outsourcing handles a specific project or a portion of IT work where the outsourcing service provider is responsible for managing and completing the project. *Selective sourcing* is an option, where each company decides to outsource a selected IT function to external service provider(s), while retaining the budget internally between 20% and 80%. *Total outsourcing* occurs when the service provider is in total charge of the IT work. In total outsourcing, most of the IT work (over 80%) is handled by an external service provider, or retained within company walls. This taxonomy defines different level of service provider commitment and responsibilities.

Sharma (2006) presents four models to effectively utilize global software development resources. The models are: job-shop, component-responsibility, product-incubation, and business incubation. In the *job-shop model*, companies retain product architecture and design at their home office while coding, testing and sustenance engineering are sent to low-cost destinations, such as Vietnam or China or India. *Component-responsibility model* takes advantage of the service providers' specialization, because the responsibility of components or sub-products is handled by different development sites. Those sites have full responsibility for the software development cycle from design to coding and testing. This requires more collaboration between service providers and service users to fully receive all benefits. The *product-incubation model* is usually exercised by start-ups, because it requires none or little technical and engineering knowledge. In this model, companies deal out all the engineering responsibilities to an external service provider while keeping all the customer-involving tasks such as sales, marketing and all other non-engineering activities, including product management, closer to the market and the customer. The final model, *business-incubation*, is often used by the multinational companies to incubate new businesses and associated business models within the emerging markets themselves. This is an experimental model where companies try out new ideas and create a better position in the emerging market. The abovementioned models and factors deal with service users' strategies and capabilities.



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A special issue both service providers and users must pay attention to is the choosing of an appropriate pricing model during the contract negotiations. According to Robinson and Kalakota (2004), the most popular pricing models are: a) fixed, b) transactional, c) activity-based, d) cost-plus, e) gain-sharing or risk-reward, and f) hybrid pricing models. Each of these pricing models has its pros and cons, so suits different needs.

The *fixed pricing model* is often chosen because it leaves little room for misinterpretations and is easy to budget, especially if the volumes can be predicted. In this model, both service user and service provider agree about the software products, or services to be developed in exchange for a fixed price. Failing to accurately estimate the needed resources and time, or any other failure to fulfil the contractual obligations within the specified time, will negatively affect the revenue of the service providers.

Another popular pricing model, especially in the field of business process outsourcing, is the *transactional pricing model*, or traditionally unit pricing. In this model, the service user pays the service provider according to the produced unit of work. The advantages are ease of design and implementation, ease of understanding and budgeting, and clearly defined terms with little risk for misinterpretations. It is similar to fixed pricing model.

A more complex and flexible pricing model is the *activity-based pricing model*, where a service user agrees to pay a flat fee for covering the service provider's fixed costs, such as leases, hardware, software and telecommunication. This model's strengths are accurately reflected costs according to real outputs, overpricing to cover risks is not necessary, and it allows companies to more precisely track costs.

The *cost-plus pricing model* is often used as a temporary contractual measure. It consists of a fee for cost of services plus a mutually agreed extra upon profit margin. Cost-plus pricing is an effective nature of the contract in transition. Cost-plus pricing protects service users from protective overpricing by the service providers. Conversely, cost-plus pricing protects service providers from losses due to volatile volumes and business levels by being guaranteed a profit.

In difference to the previous pricing models, the *gain-sharing pricing model* may contain one or many of the aforementioned pricing structures, in addition to concentrating on rewarding improvements and exceptional performance by benchmarking the defined key performance indicators, or areas that require progress. The gain-sharing model implies service providers continuously work harder to create value – when the customers benefits, they will too.

*Hybrid pricing models* can be used when none of the earlier pricing models alone fit the needs of both parties. Hybrid modelling is any combination of pricing models, and it will add complexity to the contract negotiations and performance monitoring, but it responds better to the specific requirements of each outsourcing project.

Another popular model is *time and material based pricing model. This model* is used, when the scope, specification and implementation plans cannot be accurately defined for a software development project. This model offers "the flexibility of varying the size and workloads of the software development team assigned to the project, while optimizing time and costs" (Sharp Interactive, 2011).



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### *The current status of IT outsourcing practices in Finland and Vietnam*

A few large and medium-sized Finnish IT companies are acting as service providers for foreign and domestic clients. For example, Tieto, a Finnish company is one of the leading IT service providers in Nordic countries providing IT, R&D and consultation services. It has operations in more than 25 countries and having approximately 17,000 employees (tieto.com, 2010).

In our recent interviews with a number of Finnish IT executives, we learnt that several of these Finnish companies have established their subsidiaries (software and services development centres) in onshore, near shore (e.g. Sweden, Estonia, Russia, Hungary, Romania) and offshore (e.g. China, India). Some of these companies are service providers, who are developing software products and services for their clients as well as some are clients, who are developing software products and services for their parent companies. They are utilizing single or multi-vendors or dual approaches and deploying a number of offshore business models, such as offshore development centres, pure outsourcing, managed outsourcing, pure captive centre, collaborative onsite-offshore development, etc. Even many Finnish IT services companies are adopting a global delivery model based on four components: onshore (same country as client); on-site (at the client site), near shore (country near to client country) and offshore. It is evident that some Finnish companies are expanding their business portfolio through mergers and acquisitions. In addition, Nokia attracts outsourcing service providers searching for partnerships with Finnish companies.

The subsequent "types of outsourcing" are commonly used by Finnish IT companies: higher level requirement analysis, programming, testing, shared responsibility, project management, subcontractor responsibility and business process outsourcing. Other forms of R&D outsourcing are rarely used. It is apparent that selective outsourcing is highly preferred by the Finnish companies.

According to, Vietnamese ICT Delegation (2008), about 20 well-known Vietnamese software and ICT companies had visited two cities (i.e. Helsinki and Turku) in Finland in October 2008, in order to get a better understanding of the ICT sector in Finland as well as initiating cooperation with Finnish companies. The seminars dealt comprehensively with these two countries' mutual interests in the ICT sector. In addition, the Vietnamese delegates had visited many key players of the Finnish innovation system, information society and universities.

The Embassy of Finland in Hanoi assisted in organizing and financing the trip. The main objectives of this trip were to support capacity-building of the private sector in Vietnam and enhance Finnish-Vietnamese business partnerships. After this event, several Finnish companies had visited Vietnam to explore the offshore outsourcing opportunities and a few of them may have already entered Vietnam.

## SPECIAL ISSUES FOR FINNISH COMPANIES IN USING VIETNAM AS AN OFFSHORE OUTSOURCING DESTINATION

Compared to other Nordic countries, it is obvious that Finnish IT companies are using offshore outsourcing in a limited scale. To put it simply, Finnish software companies have not yet

discovered offshore outsourcing as a feasible approach for producing software. The factors limiting offshore outsourcing are the immature product development processes that Finnish software companies are using, inefficiency in finding the right modules to be outsourced, inability in giving in detail specific requirements (Ronkko et al., 2007), small size of the companies, lack of international business know-how, to name a few. Therefore, with low experience levels both in Finland and in Vietnam, companies should take extra care of the outsourcing process. Kyostila and Cardwell (2005) and Yalaho and Nahar (2009) revealed that from the Finnish managers' point of view, a) competence of workforce, b) English language skills, c) wage rates, d) level of IP rights protection, and e) social and political stability were the most important location factors. These factors should be taken into account when service users decide the outsourcing strategy.

In addition, Asian culture, including Vietnamese, has large impact on business relationships. The cultural difference creates a significant barrier to the outsourcing process and must be managed. For example, sometimes Asian employees seem to lack initiative, but this is due to the large power distance as they are expecting those in higher hierarchies to give out orders. In addition, uncertainty avoidance means that risk taking is not favoured. The next significant issue in Asian culture is trust. Thus, trust creation often requires time and personal contacts lengthen sales cycles and increase costs (Beulen & Ribbers, 2002).

Finnish companies should start with small projects to gain the crucial experience and management know-how, as well as preparing their organizations and working methods for offshore outsourcing software development. Carmel and Agarwal (2002) found that domestic mindset and inexperience were the two major factors for companies not to implement offshore outsourcing. The organizational culture and change resistance can also hinder a company's willingness to outsource.

Another factor favouring offshore outsourcing in Finland is that domestic service providers prefer long term contracts and charge more for contracts under six months (Nahar et al., 2002). Long term contracts will lessen the flexibility that can be achieved by outsourcing.

## SPECIAL ISSUES FOR VIETNAMESE SOFTWARE DEVELOPERS TO PROVIDE OUTSOURCING SERVICES TO FINNISH COMPANIES

This subsection adds to the discussion about the specific circumstances of Vietnamese outsourcing service providers providing their services for Finnish outsourcing service users.

Currently, India and China are the most preferred offshore outsourcing destinations among Finnish software companies. In addition, near shore destinations, such as the Baltic countries, Russia, Hungary and Romania are also favoured. Thus, Vietnam must create a competitive advantage over these nations to entice the Finns to enter the Vietnamese offshore outsourcing market.

Nahar et al. (2002) addressed that work permit and visa barriers often prohibit Finnish companies using the body-shopping strategy. Therefore, Vietnamese companies' options are narrowed down to offshore software development services and cooperation.



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As discussed earlier, there are approximately 1,600 Vietnamese diaspora living in Finland. Many of the Finnish *Viet Kieu* have been born and educated in Finland and are familiar with the language, culture and working methods. Gallaugher and Stoller (2004) have noted that in their case company, the *Viet Kieu* senior management team, which had received their upbringing and education in the US, helped to efficiently overcome cultural and linguistic barriers. Another source of culture mediators can be found from Vietnam's history of development cooperation. According to the Finnish Foreign Ministry (2001), Finland's and Vietnam's development cooperation history dates back to the mid 1970s. During these years, Finland has become known to local people and vice versa. The Vietnamese companies could utilize those connections created during the development cooperation project by hiring the former staff. They possess hands on experience and knowledge of both sides, and that knowledge can become crucial during service user procurement, project implementation and marketing.

Vietnam is closely connected with China and Japan in terms of culture, thus, creating a natural and easy destination to procure service users. Japan, especially, has been a significant service user base for Vietnamese service providers, and, for instance, one of VINASA's primary goals is to enhance Vietnam-Japan collaboration (Vietnam Software Association, 2006; Vietnam Business News, 2010c). European companies have not yet fully discovered Vietnam as an outsourcing destination, as seen from VINASA's report of Top 10 outsourcing service providers. In most cases, the share of European customers in offshore revenues are nil to 10%. For that reason, Vietnamese service providers should increase their awareness in Finland and other European countries by marketing campaigns and trade agreements.

To summarize this section, Vietnam and its offshore outsourcing industry was discussed as a possible destination for Finnish software developers. The review found out that Vietnam has already created a good impression on the global outsourcing market. Vietnamese software companies are growing at a fast pace. Vietnam's strengths in terms of outsourcing destination are, for example, a) low costs, b) abundant young, but to some extent well-educated, hardworking and loyal workforce, c) strong government support, and d) stable political, social and economical environment. The shortcomings are, for example, a) small amount and size of firms, b) lack of experience, c) lack of management and marketing skills, d) poor level of infrastructure, and e) poor level of IP rights protection and legal environment.

The discussions above show that there are a lot of benefits and challenges involved in offshore outsourcing of software development to developing countries. The review also discussed the special issues involved in the outsourcing relation between Finnish and Vietnamese firms. These issues are different levels of expertise, infrastructure, way of doing business, working methods, cultures, time zones and distances, and their impact on the offshore outsourcing process. Finally, the review described approaches and implications for companies of developing and developed countries regarding how to create and implement successful outsourcing projects.

The literature review described in this section has been utilized as a foundation for the conceptual model.



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## THE CONCEPTUAL MODEL OF OFFSHORE OUTSOURCING OF SOFTWARE DEVELOPMENT TO DEVELOPING COUNTRIES (i.e. VIETNAM)

This section presents the conceptual model of offshore outsourcing of software development to developing countries (i.e. Vietnam). The model has been constructed to answer the knowledge gap highlighted by the research question and the research objectives. The model (see Figure 1) features the process of offshore outsourcing of software development; the environment where this outsourcing takes place; the special requirements and challenges of outsourcing to developing countries from Western outsourcing service user's; and the developing country's outsourcing service provider's points of view. These macro level factors are country specific; therefore, companies have to create plans for how to cope with the environmental challenges. From macro level environmental factors, the model moves to company level factors. The outsourcing process is aligned with the macro and micro level factors by weighing the advantages and challenges.

### *Global and country environment*

Global economy and politics have an impact on international business, and thus, on offshore outsourcing. Within globalized commerce, there are country specific factors, which should be considered in offshore outsourcing projects.

The country or macro level factors are: a) the level of availability of adequate and skilled human resources, b) the availability of adequate technological and societal infrastructure, c) governmental policies and legal framework, d) geographical location, e) cultural and language skills, f) general cost levels, and g) other possible factors (Nahar et al., 2002; Tessler et al., 2003; Carmel, 2003b; Tan & Leewongcharoen, 2005; Yalaho & Nahar, 2009). These factors need to be considered for both the home country of the outsourcing service users and the destination country where the outsourcing service providers are resided.

***Availability of Adequate and Skilled Human Resources.*** As described earlier, the most critical resource of IT work is human resource. The lack of skilled IT professionals in Western countries has become a prominent challenge for local companies (Galup et al., 2004; Rao, 2004; Yalaho & Nahar, 2009). Hunting employees abroad may be a solution for this question, but there are many impending pit falls. Outsourcing service users should assess that there is enough workforce with adequate technological, managerial and project work skills in the destination country currently and also for the future.

In the case of developing countries, there are plenty of IT professionals. India, China and other countries produce a great deal of new IT workforce, but the challenge is lack of experience. Most of the developing countries' workforce is newly graduated and there is a lack of hands on knowledge of the industry. In addition, the literature review described challenges in the developing countries' education systems and chaotic nature of diplomas, attrition rate and lack of experienced workforce, which will result in increased coordination and management costs (Kalakota & Robinson, 2005; Erber Erber & Sayed-Ahmed, 2005; Yalaho & Nahar, 2008).



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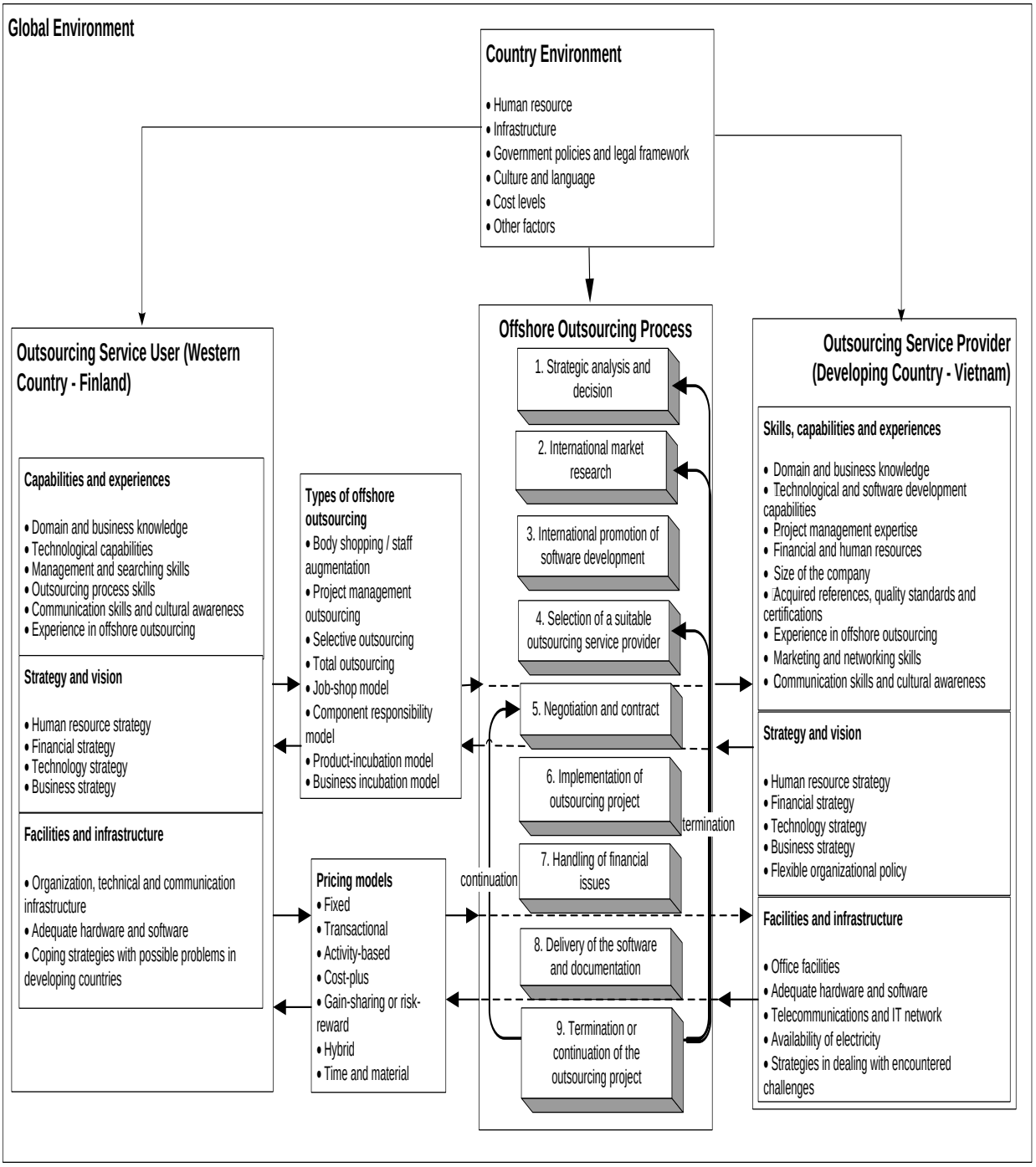
**Figure 1: An integrative conceptual model of software development through offshore outsourcing to developing countries (i.e. Vietnam).**




***Availability of Technological and Societal Infrastructure.*** Efficient and functional infrastructure is the foundation of modern day global commerce. In software development outsourcing, an adequate level of technical infrastructure, such as information and telecommunication networks, and available hardware and software are crucial. Companies need

to pay attention to these following technical issues in developing countries (Nahar et al., 2002; Prikladnicki et al., 2003; Gallaugher & Stoller, 2004; Yalaho & Nahar, 2009):

- The level of information networks, such as internet.
- The level of telecommunication networks, such as telephone, mobile phone and facsimile.
- Availability of hardware, such as computers, networking and communication hardware, and software.
- Electricity supply and urban infrastructure.

For example, Vietnamese companies need to tackle obstacles, such as low bandwidth internet connections, because all the communication is passing through the government's controlled gateway. Developing countries have also notoriously lacked behind Western countries in societal development. Challenges are (Nahar et al., 2002; Orlic et al., 2003; Nguyen, 2004; Rao, 2004):

- Corruption.
- Weak legal framework and unstable justice system.
- Low level of IP rights protection and enforcement.
- Low level of urban infrastructure, pollution, etc.
- Immature banking and finance sector.
- Poor or total lack of social security system.
- Poverty and big income gaps.

Barriers regarding corruption, legal systems, low IP rights protection and enforcement require that companies must pay extra attention to risk management.

***Government Support.*** The software outsourcing industry in developing countries needs the government's full support. Governments have many options to subsidize the industry by (Nahar et al., 2002; Tessler et al., 2003; Nguyen, 2004; Erber & Sayed-Ahmed, 2005; Tan & Leewongcharoen, 2005):

- Setting up favourable investment and operating environments through creating a funding and investment system, and giving out tax relieves.
- Expanding the market, by subsidizing local companies and creating favourable market environments for software companies.
- Developing human resources, by creating high quality education systems.
- Protecting copyrights and fair trade, by introducing comprehensive laws and law enforcement.
- Creating a reliable telecommunication infrastructure.

The literature review found that the government's actions are critical to a country's success.

***Culture and Language.*** At the country level, the differing nature of culture can create a negative impact on operations in offshore outsourcing. At the firm level, there are also different corporate and organizational culture and practices (e.g. issues such business moral and norms are paramount) (Nicholson & Sahay, 2001; Krishna et al., 2004). According to Karolak (1998),



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cultural differences and language barriers are one of the major obstacles of virtual teams. Each country has its own culture and some have their own languages that can cause problems in outsourcing relationships such as: a) communication problems, e.g. misunderstandings and misinterpretations, b) loss of cohesion, and c) lack of trust.

Some developing countries, including Vietnam, have to improve their proficiency in English, which is the most common language in Western world. In addition, English is often the organizational language of major Finnish companies.

***Cost Levels.*** Cost saving has always been one of the major rationales for companies to seek for outsourcing services. The literature review found out that by outsourcing to developing countries' companies can save a significant amount of money. Cost savings can be gained by (Carmel & Agarwal, 2002; Nahar et al., 2002; Koong et al., 2003; Erber & Sayed-Ahmed, 2005; Tan & Leewongcharoen, 2005): a) low salary rates of software professionals, b) low costs of hardware and infrastructure, c) low attrition rates, and d) governments' support, e.g. tax and office subsidies. However, salaries are continuously rising in developing countries. Companies should offer good salaries and various incentive programs to attract and retain highly skilled IT employees. This factor applies only to the countries of the outsourcing service providers. Outsourcing service users should consider these issues and compare to their home country costs as to whether cost savings can be achieved.

***Other Factors.*** In addition to aforementioned factors, there may be service user specific requirements for the selection of a suitable country, such as geographical location, potential market base for the future, cultural affinity, and a favourable political and economic situation. Geographical location can enable companies to pursue 24 hour workdays by "following the sun", or lower coordination and communication costs if the country is located near the service user's home country.

Companies may also value countries with a potentially big customer base and commercial possibilities. These countries have a big population, growing consumer base and market growth potential. A favourable political, social and economic situation reduces risks and enhances stability.

### C*ompany level factors*

Company level factors are: a) skills, capabilities and experiences, b) strategy and vision, and c) facilities and infrastructure. These factors must be assessed by both outsourcing service providers and users. From a service user's point of view, selection of a suitable service provider is a critical task.

***Skills, Capabilities and Experiences.*** The knowledge level of both the service user and service provider needs to be measured. The service user's capabilities for outsourcing work should be measured before entering outsourcing projects. Service users should assess their: a) business and domain knowledge, b) technological capabilities, c) management and searching skills, d) outsourcing process skills, e) financial and human resources, f) communication skills and cultural awareness, g) organization, technical and communication infrastructure, etc.



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Companies willing to purchase outsourcing services should be ready on every level of their organization from the top managers to project personnel. Adequate training, if necessary, should be provided to overcome the barriers of culture, communication and outsourcing work.

Moreover, service providers should be measured by their: a) domain and business knowledge, b) technological and software development capabilities, c) project management expertise, d) financial and human resources, e) size, f) acquired references, quality standards and certifications, g) experience in offshore outsourcing, etc.

Choosing of suitable service providers from developing countries is a critical operation for Western outsourcers. There are many challenging barriers facing service providers in developing countries, and often compromises should be made. Therefore, Western service users should critically examine every aspect of outsourcing.

***Company's Strategy and Vision.*** According to Carmel and Agarwal (2002), companies with clear and persistent strategy and vision will benefit the most from outsourcing. A company's vision, objectives and business strategy will shape the goals they want to pursue. To be able to achieve those goals, plans should be made. Therefore, Hassan (2000) has shaped four different strategies for achieving success, which are: a) human resource, b) financial resource, c) technology, and d) marketing.

The developing countries' challenges have an impact on every aforementioned strategy. For example, the financial strategy should take into consideration in improving the often underdeveloped financial systems, currencies and regulations. Marketing strategies tackle developing countries' deficient marketing channels and technology strategies to immature infrastructure. Human resource strategies are also extremely important while operating in developing countries. Often chaotic education systems, quality differences in teaching, and an abundant amount of graduates create uncertainties and pit holes.

***Company's Facilities and Infrastructure.*** In this issue, companies in developing countries have much larger obstacles than Western companies. New software parks and technology centres are built in developing countries to help local companies overcome the disadvantages of immature infrastructure and communication networks (Nahar et al., 2002; Tessler et al., 2003; Nguyen, 2004; Wei & Peach, 2006; Yalaho & Nahar, 2009). Prospective service providers should have the full scale of hardware and software resources as well as office premises, telecommunication resources and electricity reserves.

In contrast, large-sized Western service users often have top notch facilities and communications infrastructure. However, service users should prepare for possible obstacles created by poor infrastructure in developing countries, by developing clear instructions and alternative methods.

### *Software development through offshore outsourcing process*

The software development through offshore outsourcing process has been introduced in the literature review (Nahar et al., 2002; Momme, 2002; Momme & Hvolby, 2002; Wei & Peach, 2006; Yalaho & Nahar, 2009). This section provides an insight on the issues developing countries have on each step of offshore outsourcing of software development process.



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**1. Strategic analysis and decision** is the first step. The companies should evaluate their strategy and resources, as well as analyze if outsourcing fits their vision and will help them reach their goals. Different aspects of software development through offshore outsourcing process, such as opportunities and challenges, must be assessed before making the decision to outsource software development partly or on a full scale.

**2. International market research for offshore outsourcing of software development** is the second phase. Moreover, this is where countries are assessed and the country related factors are weighted for choosing a suitable destination, or destinations with a lower level of risk, from which the potential outsourcing service providers are searched. In the case of developing countries, the challenges have been discussed in the literature review and earlier in the model.

**3. The international promotion of offshore outsourcing of software development** phase's aim is to raise awareness of the company and its needs within potential service providers in identified countries. If the phase is successfully conducted, knowledge about service providers is gathered and used in the next phase. Challenges identified in the literature review with developing countries in this phase are geographic distance, cultural differences, poor communication and marketing skills, and lack of effective marketing channels (Nahar et al., 2002; Yalaho & Nahar, 2009). To leverage the barriers, software business associations, such as VINASA, CSIA and NASSCOM, were created in Vietnam, China and India. They are also an effective source of knowledge. To identify appropriate service providers in Vietnam, Western customers can communicate with VINASA.

**4. Selection of a suitable outsourcing service provider** is performed by processing the information gathered in the earlier phase. The potential service providers are comprehensively researched by assessing issues (Sparrow, 2003; White & Cook, 2003; Mahaney & Greer, 2004; Goland, 2005; Wei & Peach, 2006; Yalaho & Nahar, 2009), such as business and domain knowledge, technological and software capabilities, project management expertise, adequate financial resource, adequate and skilled human resources, size, a satisfactory references list, quality standards and certifications, and experience in outsourcing. Service providers in developing countries often have shortcomings that must be considered. For example, Vietnamese service providers often lack experience, seasoned and skilled professionals, as well as suffer from poor infrastructure.

**5. Negotiation and contract** is finally signed with the chosen potential service provider. The offshore outsourcing contract is an important part of establishing an effective partnership. Negotiable issues such as, responsibilities, the actual product or service requirements, performance measurements, delivery time, offshore business models, pricing models, payment arrangements and termination, are put into context (Bryson & Ngwenyama, 2000; Nahar et al., 2002; Nguyen et al., 2006; Yalaho & Nahar, 2009). Immature legal systems, weak IP rights protection, lack of transparency, corruption and unpredictable law enforcement in developing countries are barriers for Western companies during this phase.

**6. Implementation of the outsourcing project**. The main activities of this phase include: developing an implementation and commissioning plan, building a joint implementation and commissioning team, training the employees of both parties, reviewing of milestones, testing, quality assurance and the reporting of progress by the service provider. In some cases, the



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service user brings the service provider employees onsite and provides them with training on issues, such as organizational practices, norms, cross-cultural issues, business domain, methodological tools (e.g. architectural modeling, the final specification design phase), as well as to get to know each other better (Momme & Hvolby, 2002; Sahay et al., 2003; Nicholson & Sahay, 2004; Yalaho & Nahar, 2009). Challenges of developing countries' service providers, are lack of technically experienced professionals and poor infrastructure in exchange for low costs.

Managing one or more external service providers as part of an outsourcing strategy is essential as relationships become of greater importance to mitigate risks and to reduce costs, etc. After reviewing the finished software product according to the agreement and contracted pricing model.

**7. Financial issues are handled**. Difficulties in this phase are raised by immature banking and funding systems, as well as inflexible and potentially unconvertible currencies. Therefore, companies have to find ways to overcome these barriers. According to Gallaugher and Stoller (2004), their case company went around the problem by directing the payments through the US parent company. Yalaho and Nahar (2009) stated that their service providing companies faced cash flow problem. When the service users delayed payments, the service providers had no control over it. They may loose their service users if they put some charges. Therefore, they used bridge financing.

**8. The software products and documents are delivered** to the service user subsequent to the clearance of financial issues followed by **9. Termination of the outsourcing relation or continue** with a negotiation of a new project. If the continuation is chosen for a new project, the company will return to the negotiation and contract signing phase and continue. In the case of termination, the service user will start the outsourcing process by reassessing the international markets and selecting a suitable service provider, or conducting a new strategic analysis on the basis of their outsourcing experiences.

To conclude, the conceptual model was developed on the basis of the literature review and our long practical experience in managing of offshore IS development projects. The model included the main issues involved in offshore outsourcing of software development to developing countries. The focus has been on identifying the service provider's capabilities, as well as opportunities and barriers of developing countries and outsourcing service providers located in those countries. The factors are divided into three levels: global and country specific, company specific and outsourcing process specific. These can affect the success of outsourcing projects.

## CONCLUSIONS AND IMPLICATIONS

No previous research existed concerning offshore outsourcing of software development to Vietnam by Finnish outsourcers and this was proven by the in-depth literature review. The study answered the research problem by a) analyzing the Vietnam's IT industry and differentiating it with Chinese IT industry from various important aspects in terms of software and services outsourcing, b) reviewing the literature concerning outsourcing of offshore software development, and c) identifying the key challenges and opportunities to outsource to Vietnam and "types of offshore outsourcing" that may be used to do so.



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Through an in-depth literature review, the study found out that Vietnam has already created a good impression on the global outsourcing market. Vietnamese software companies are growing at a rapid pace; thus their potential is already evident. The findings reveal that Vietnam's strengths in terms of outsourcing destination are, for example, a) low costs, b) abundant young, to some extent well-educated, hardworking and loyal workforce, c) strong government support, and d) stable political, social and economical environment. Vietnam is in a better position than China in terms of the advantage of low labor costs, English fluency, and political and ethnic stability. Vietnam has already ranked as the 10$^{th}$ favoured outsourcing destination. Vietnam can become a competitor to China and India in the future. However, there are still various problems in Vietnam's IT outsourcing industry. All these problems need to be alleviated by enhancing technical expertise, advancing managerial skills, adopting new ideas, scaling up capacity, improving international business practices, and enhancing process capability. These will create further opportunities for Vietnamese companies to succeed in wining more international outsourcing contracts.

The model developed in this study focused on three major categories of factors and their associated sub-factors that are important to the success of offshore outsourcing projects. These factors are: a) global and country level factors, b) company level factors, and c) the actual offshore outsourcing process and how it is implemented.

By using the research results (i.e. the conceptual model), Finnish and other Western outsourcing users may be able to effectively use Vietnam as a destination for software development outsourcing. Vietnamese service providers may also be able to effectively deal with Finnish and other Western outsourcing users. A few more implications of this study include that service provider and user companies can analyze the potential risks and key issues during designing, implementing and managing the outsourcing process. Service provider and user companies can adopt measures introduced in this study to overcome these challenges. Finnish companies can identify if it is beneficial for them to outsource to developing and emerging countries, especially Vietnam. IT companies can have a better understanding of Vietnam's IT industry and potential prospects. Governments (policy makers) can have a better insight of the problems and can produce incentives and improve national and organizational environments for offshore software outsourcing. The model can be applicable to any developed and developing countries, not limited to Finland and Vietnam. Thus, in its depth, range and contributions this study provides a greater richness of understanding this area. However, further research in this area is needed to validate the conceptual model empirically. In our next paper, we will validate this model by conducting a multiple case study.



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